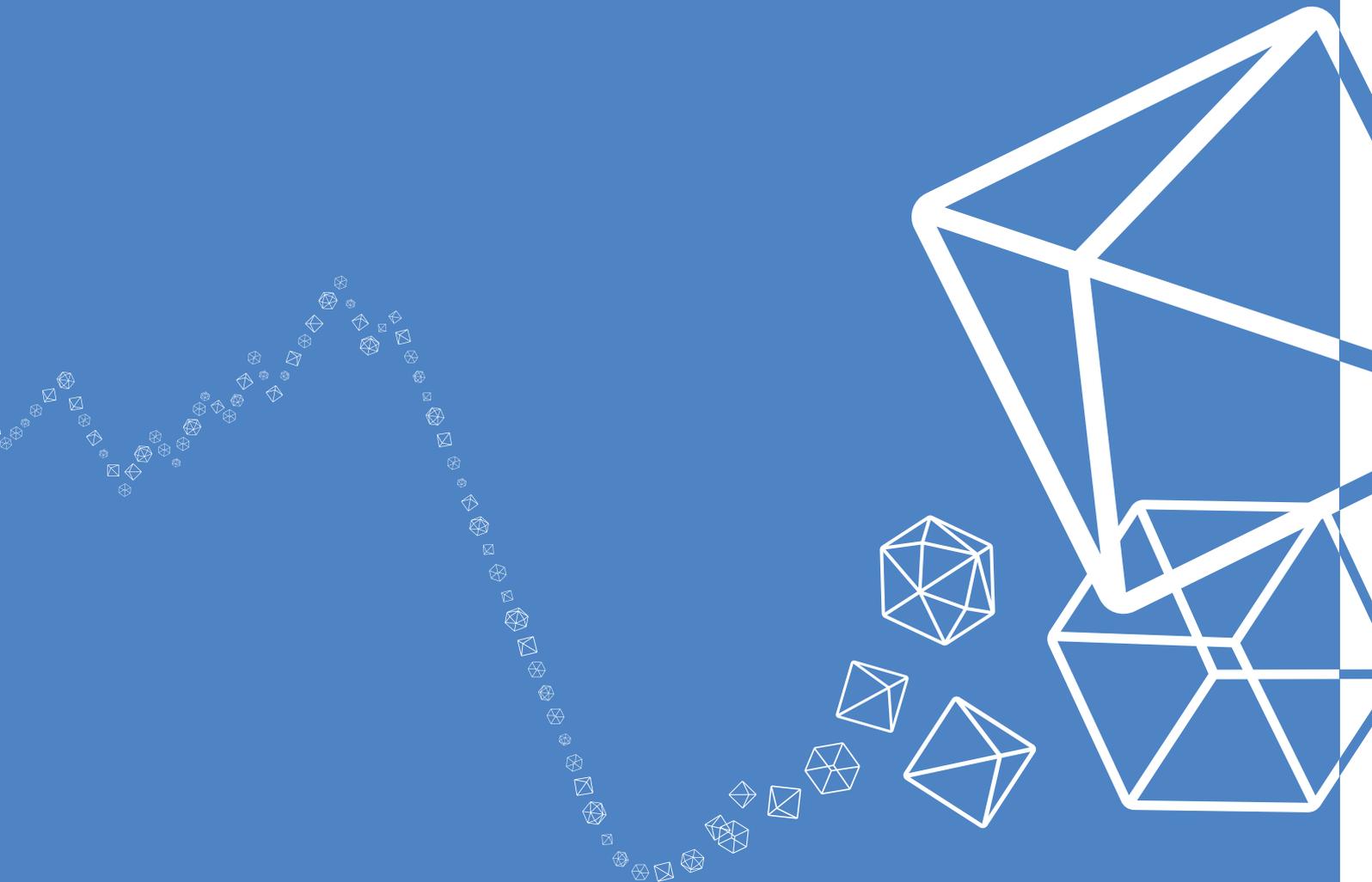


# Demanding Growth in Scotland:

## Why Scotland needs a recovery plan based on growth and innovation

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## **Demanding Growth in Scotland:**

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# Executive summary

Recovery from the recession will require an imaginative approach from government. Traditional intervention policies have sought to prop up old industries. But such short-term fixes will not produce long-term growth. Instead, government policy should focus on innovation and growth, supporting innovative sectors that have the potential for strong growth once the recovery begins. It is a move away from corrective intervention towards creative intervention.

Acting decisively and intelligently is necessary to transform an economy that had become unduly reliant on financial services. This is not about a return to post-war industrial policy, where the government tried to 'pick winners'. Rather it is about being willing to create the conditions in which innovation can flourish. These conditions will include the development of networks and may mean a degree of cooperation rather than competition initially.

There are good examples of where such a policy has worked. The Finnish telecommunications industry, including Nokia, grew from a national economic strategy developed in the recession which followed the collapse of the Soviet Union. In Britain, defence equipment is developed through a planned market approach which helps to develop the latest military hardware. Even the growth of Silicon Valley as the hub of international IT was partly a spin-off from the subsidised American defence industries.

Our response to the recession should not seek to build national champions. But it should support new areas

of emerging demand, where important long-term trends are giving rise to new markets. Three areas for potential growth are especially promising: the green economy; creative industries; and healthcare, including services for an ageing society and biotechnology. NESTA believes that these are all areas of high future demand, significant existing strengths, and strong technological changes. The green economy and healthcare could have a combined market size of £93 billion by 2013, with the creative industries alone contributing £85 billion to GDP.

Success in these areas requires the government to support and empower businesses through a combination of infrastructure development, regulation that actively encourages growth, and the use of government procurement to stimulate demand. Procurement, in particular, is successfully used to support innovative small businesses in countries like South Korea and the United States.

Such a recovery plan can deliver good results at relatively low cost, provided it is well-targeted. Upgrading our broadband network would cost a third of the price of a third runway at Heathrow. Carefully targeting existing funding would transform the environment for industries in the three targeted areas. In the Appendix, we show how a very specific targeting at one creative industry, videogames, could help create new jobs with extra investment, tax credits and education, at an extra cost of just over £15 million. We estimate that this sort of support, across the creative industries, could help create over 100,000 new jobs across the UK by 2013.

# Demanding Growth in Scotland:

## Why Scotland needs a recovery plan based on growth and innovation

### **The economy faces a series of extraordinary challenges in the coming years**

#### **Economic recovery requires a change of economic direction**

After a decade of continuous growth, the UK economy is facing a recession of exceptional severity. The International Monetary Fund (IMF) forecasts a 2.8 per cent contraction in UK Gross Domestic Product over 2009, and fears that the world economy could shrink for the first time since the 1930s.<sup>1</sup> In Scotland, the economy is projected to experience its worst recession since 1980, shrinking by 0.4 per cent in 2009, before growing again by 1.5 per cent in 2010.<sup>2</sup> At the heart of this recession is the collapse of the financial services industry, with bank failures and nationalisations on a scale not seen for decades. New, tighter regulations on financial institutions are being imposed worldwide in response.

But these finance and business service industries were central to the UK's relative prosperity, fuelling economic growth and providing hundreds of thousands of jobs. From 2000 to 2007, financial services added 15 per cent to annual GDP growth.<sup>3</sup> But finance will not save us in the future. The challenge facing the UK economy is now to find the new sources of growth that will drive prosperity over the coming years. The knock-on effects of the global financial crisis are hitting Britain's non-financial businesses hard. Reduced business lending and lower spending is hitting British industry, sparking a chain reaction of distress, with industries from car

manufacturers to shoe-makers seeking government help.

The Scottish Government has identified long-term challenges to Scotland's economy and society. These include boosting Scotland's growth, productivity, population and participation, and in delivering on the desired characteristics of growth – solidarity, cohesion and sustainability.<sup>4</sup>

Sitting idly by in the face of the worst recession of modern times is not an option. But bailing out industries piecemeal is no better. A coordinated approach is clearly preferable. The trouble, however, is that 'industrial policy' carries with it a heavy history. It is redolent of failed attempts to boost post-war British manufacturing, a process of 'picking winners' that rarely came good.

NESTA argues that there is a better option. The current recession offers a precious opportunity for both businesses and government to prepare for the future. In particular, this crisis can act as a spur for innovation, focusing attention on pressing needs and demanding an immediate response. 'Attacking the recession' means providing the support for new, dynamic growth sectors to address long-term needs so that the economy can emerge in a better shape from the current crisis. The Government is increasingly recognising it has an important role to play here:<sup>5</sup> not only through subsidy and bail-out, but by coordinating its efforts and removing the barriers to growth in key sectors where current and future market demand is strong. This should be the basis for

how government addresses the downturn, as it offers a basis for emerging from the recession with a more innovative, resilient economy than we had before. The time is ripe for a move away from intervention to 'correct', and towards intervention to 'create'.

### **A strategy for recovery is a practical economic solution**

#### **But industrial policy has a poor reputation and record in the UK**

Before the recession, things seemed clear. Government intervention should restrict itself to providing the institutional and regulatory context in which competition could flourish.<sup>6</sup> UK governments have been understandably keen to distance themselves from the perceived failures of direct industrial intervention in the 1960s and 1970s, when 'national champions' like British Leyland floundered, and schemes such as the National Economic Board failed to live up to expectations.<sup>7</sup>

Three reasons help account for this failure. First, old-school industrial policy did not in fact 'pick winners', despite its declared intentions. The bulk of policy was directed at sustaining existing industries, not encouraging new ones.<sup>8</sup> Second, in the alleged interests of economies of scale, policy became heavily focused on the promotion of single champions in each sector, failing to diversify risks.<sup>9</sup> Third, governments focused on inputs – pet industries and technologies – rather than starting from an understanding of consumer and social demand, and working backwards. The development of Concorde is a classic example of this, in which a costly technology was researched and promoted by successive governments to meet an unclear customer need.

All three failings stemmed from the inability of governments to locate sector- or industry-level interventions within a broader economic strategy. A well-defined national economic strategy, with broad public support, can prevent policy becoming swayed by short-term, sectional interests: it sharpens government commitment, keeping policymakers focused on long-term national economic priorities. Interventions will carry greater credibility as a result.

#### **There are rigorous economic grounds for more active industrial policy**

A hands-off attitude by government will not lead us to economic recovery. Economists point to a number of possible 'market failures' that necessitate government intervention. The Harvard economist Dani Rodrik has highlighted the particular problem of 'coordination failure', when a project returns a

profit to participants when all participate fully, but returns a loss if only some do.<sup>10</sup> This sort of failure is particularly likely to occur when innovation and growth are at stake. Large-scale innovative projects depend on different firms cooperating with each other, have large sunk costs (such as installing specialised machinery), and their outcomes are very uncertain.<sup>11</sup>

Establishing and sustaining high-growth sectors of the economy can be thought of as an innovative project on a very large scale. But as well as supply-side coordination failures, new sectors will not take off if there is insufficient early demand for their products and services. A species of coordination failure can occur because there is no market now for new goods and services produced in the future: producers can fail to spot the potential demand for innovative products, weakening their incentives to innovate.

Lead users – important customers with complex demands for new products and services – can therefore play a critical role in driving innovation. A lead user seeks goods or services ahead of the general market, showing a path for others to follow.<sup>12</sup> There are important areas in which government itself can act as this lead user, using its own procurement spending to create new markets.<sup>13</sup>

#### **The recession has strengthened the argument for intervention**

Recessionary pressures on companies are already starting to encourage retrenchment. Innovation spending as such is often seen as an unnecessary 'luxury' in such circumstances, with companies looking to cut costs.<sup>14</sup> The private sector alone may not be able to maintain a high rate of innovation.

Alongside that, a democratic government will reflect the legitimate concerns of its citizens to combat the effects of an economic recession. And government can never truly be 'hands off': it inevitably intervenes in the market, through regulation, taxes and spending, and the entire system of law and property rights. We argue that if intervention is occurring anyway, it should be strategic.

#### **The right kind of government intervention has worked in the past**

##### **There are many examples of good, existing industrial policy**

Despite the UK's poor experiences, it is possible to do industrial policy well. The successes of other countries, from Japan in the sixties to Finland in

the nineties, show that intervention can work, so long as it is focused on growth and based on an understanding of future needs. The example of the UK's Defence Industrial Strategy shows that effective industrial strategy is not a purely foreign phenomenon.

### **Finland showed that a developed economy can radically transform itself in response to recession**

The Finnish economy entered an exceptionally sharp recession in 1990, following the collapse of its major trading partner, the USSR. At its worst, unemployment hit 20 per cent.<sup>15</sup> Until then, Finland's economy had been based on primary goods and heavy industry: it was not well-placed to withstand the emerging cost pressures of globalisation.

Building on Finland's strong engineering inheritance, the Finnish government developed a new economic strategy, heavily geared towards technological innovation and centred on the growth of a telecommunications cluster that included companies like Nokia. A high-level Science and Technology Policy Council, chaired by the Prime Minister, was able to draw upon a broad range of representative bodies and individuals and enjoyed sufficient political weight to be able to give an effective lead to coordinated policy across government.<sup>16</sup>

Finland's annual productivity growth rate rose by nearly 30 per cent over the decade after 1993, when the national economic strategy was published, placing the country in the top rank of world innovators. Crucially, the strategy identified existing strengths – in this case the emerging university telecoms cluster – and mobilised resources and political will, looking to rising sectors to drive growth throughout the economy. At its heart, the strategy saw Finland becoming a leading 'knowledge economy', creating a new national narrative around this goal. The credibility of the strategy ensured that all the necessary organisations, institutions and individuals started to act together when, too often, such efforts suffer from a failure of coordination.

### **Intervention driving growth is the norm, rather than the exception, in modern economic history**

Although dramatic, the Finnish example is not atypical. In fact, it illustrates a common trend in modern economic development. Research into the rapid growth of Japanese industries after World War Two shows that support for growth sectors was important for driving expansion.<sup>17</sup> Since the 1950s, the best-performing economies in growth and international trade have been those with some form of industrial policy, encompassing explicit microeconomic goals, or support for particular sectors.<sup>18</sup>

The USA, for example, maintained its lead in those sectors, like aerospace or nuclear energy, where there was a substantial amount of government aid and support.<sup>19</sup> Government action can also have unintended positive consequences, such as the initial development of the Information and Communications Technologies (ICT) industry in the US, supported by military spending,<sup>20</sup> or the rapid growth of the UK mobile telecommunications industry after Vodafone was granted free 400Mhz radio spectrum access.<sup>21</sup> And the Danish wind-turbine industry, now a world-leader, grew from a 1976 energy programme intended to make the country less dependent on imported oil.<sup>22</sup>

### **The Defence Industrial Strategy shows how government can engage strategically with industry**

And there is some existing experience in the UK that reinforces the point. The UK Ministry of Defence's 'Defence Industrial Strategy' is a good example of how a department with a clear focus on its objectives can drive industrial transformation. Defence is a fundamental public good that no private provider can credibly offer for a whole nation. Government has little choice but to intervene. The Strategy assumes that meeting future military needs (and likely needs) will require a well-supported market for military products and services, with multiple suppliers able efficiently to meet the complex materiel demands of modern warfare.<sup>23</sup>

Significantly, however, the document also highlights the importance of establishing long-term relationships with multiple suppliers in conditions that necessitate a very high degree of trust and collaborative working.<sup>24</sup> The Strategy recognises that competition is not always the appropriate means to deliver complex products and services, and that it 'needs to be used intelligently, alongside other models, considering the nature of the marketplace'.<sup>25</sup> Although few sectors match the long-standing relationships between supplier and government that have been established in the defence industry, their lessons can be applied elsewhere: long-term needs should be identified and long-term relationships established.

Trust and reciprocity are conducive to cooperative behaviour, even without formal incentive mechanisms.<sup>26</sup> When formal, business relationships are subject to the strains of recession, the informal networks and cooperative working practices established over a period of time become of greater importance. A successful industrial policy will build on that trust to maintain growth, from the national level to the individual firm.

## How to put growth and innovation at the heart of our strategy

### Intervention should not be feared

These examples show how deliberate industrial policy can produce excellent results. Shunning it outright because of the UK's experiences in the 1970s would be a serious error: with financial and business services no longer providing the motor for wider economic growth, the UK needs to find other sources of future prosperity. But these new sectors and industries will not emerge unassisted, particularly in a deep recession. The critical question for economic policy is how to identify and support innovative sectors with great potential.

### Government needs to prioritise its support based on demand

Since resources are limited, government support needs to be directed to where it can have the greatest effect. But unsuccessful industrial strategies usually fail precisely because of this: they pick the wrong sectors to focus on, and back them for far too long. In particular, choosing existing industries runs the risks of favouring existing technologies over innovative alternatives, and of policy being captured by sectoral experts who all too often represent vested interests.

If intervention is required, it is wiser to make it demand-led, by identifying areas – which are likely to cross traditional industry sectors and combine many technologies – where there is strong evidence of future demand as a result of customer preferences, societal trends, or major regulatory shifts. Where indicators of high future demand and strong existing UK capabilities co-exist, government action is likely to have the highest impact. Coordinating policy in these areas to facilitate public and private investment and entrepreneurship offers a way to promote growth while avoiding the pitfalls of picking winners.

We therefore propose the following three areas, all of which are poised to grow strongly as a result of future challenges, and in all of which the UK has important strengths:

- **The Green Economy:** demand for low-carbon energy and energy efficiency is accelerating, and the UK has committed to significant expenditure in this area to meet its binding carbon emissions targets. The UK's climate and geography position us well to develop our renewable energy capabilities, while a number of the UK's distinctive capabilities (such as offshore engineering) are important to cleantech businesses. With Scotland's high level of green resource, it is critical to develop this in to a wider highly skilled cleantech industry which can be a world leader. Finally,

the need to increase the fuel efficiency of UK homes and businesses provides a strong source of demand for environmental services businesses.

- **The creative economy:** the shift to a 'digital economy' and the convergence of existing digital formats have been estimated to produce \$1 trillion worth of value between 2005 and 2010.<sup>27</sup> The UK has some of the world's strongest creative and content industries, which are well-placed, with support, to corner a major chunk of that market. The Scottish Government should take any practical steps possible to encourage innovative creative businesses to develop. This should include strong powers for the proposed Creative Scotland to help develop creative industries beyond the current Business Gateway Services.
- **Twenty-first century healthcare,** in particular biotechnology and services for an ageing society: the demand for the innovations produced by biotechnological research is likely to grow as traditional pharmaceutical drug discovery becomes ever less rewarding. At the same time, the demand for healthcare services will be shaped by the greying of our population and those of other developed countries. The UK's strengths in biotechnology (where the industry is second only to the US by value), traditional pharmaceuticals and medical devices position us well in this sector, as does the structure of the National Health Service, which makes system-wide, cost-reducing clinical services easier to develop.

All three contain strong innovators. Pharmaceutical companies are responsible for 35 per cent of all UK R&D spending.<sup>28</sup> The EU Community Innovation Survey shows that three-quarters of UK engineering manufacturers, including those in low-carbon industries, are innovation active, introducing new products or processes in the past year. This is ahead of all other sectors. The creative industries, meanwhile, are consistent innovators, with a far greater proportion of creative firms innovation-active than the UK average, and far higher levels of graduate employment – including science and engineering graduates – than across the rest of the economy.<sup>29</sup> And government already plays a major role in all three, from medical safety regulations to carbon budgets.

### Economic leaders can help drive wider economic growth

Economic leadership occurs when a firm, industry or sector uses innovation to gain a competitive advantage over its rivals.<sup>30</sup> By establishing new networks of suppliers and collaborators, an economic leader can generate growth across an economy. Nokia

in Finland helped drive economic success in the 2000s; the automotive and semiconductor industries were key to strong Japanese economic growth throughout the 1980s.

Crucially, these leaders do not have to be single firms, but can be networks of growth businesses, supported by strong supply chains and an effective research base. Either way, they require strong internal capabilities, and a policy environment that supports their development. But leadership is not established once and forever; a dynamic economy with increasing innovation will see many leaders rise and fall.<sup>31</sup> Creating an environment where new entrants can readily develop the relationships that will enable them to become future leaders is essential to innovation and growth. All three priority areas are potential leaders, with strong connections to the wider economy and clear innovative dynamism.

#### Supporting both manufacturing and services

All three priority areas span both manufacturing and services sectors. This reflects a wider tendency in the economy, in which the boundaries between 'services' and 'manufacturing' are tending to blur, and innovation in multiple forms occurs in both.<sup>32</sup>

A modern industrial strategy needs to look beyond the manufacturing/services divide, and focus on the real processes of value creation, innovation and growth. The strategy envisaged here would support the growth of firms located in both, with economic growth driven by broad areas of future demand.

Government has a set of tools at its disposal in such situations. These can be thought of in three categories, ranging from the most indirect to the most direct:

1. Its **influence and powers of moral suasion**, which can be used to encourage the commitment of other participants to a project, or to help align companies and researchers around an emerging standard.
2. Its powers of **regulation**, which can help an environment in which innovators are willing to take appropriate risks.
3. Finally, and most directly, its powers **to focus spending and taxation**, which can be used both to stimulate demand for innovative products (for example through procurement), or to reduce the disincentives to activities like research and development whose benefits are felt widely across the economy. This is often not a case of spending new money on stimulating growth, but of ensuring that existing money is spent consistently with wider plans for recovery.

Although some of these powers are reserved to Westminster, the Scottish Government is able to encourage people to work together. The 'mind-map' sessions undertaken the Scottish Government by have done this in some sectors and regions of the country, but it is critical that these have a strong implementation edge, rather than just talking about solutions.

Supporting emerging areas of economic activity can be thought of as an innovation project on a massive scale. And the role for government can be encompassed in the same three categories. In the section that follows, we look at the specific types of intervention this would entail.

**Table 1:** Estimates for annual growth in priority areas, 2008–2013

Area	Estimated GVA growth, 2008–2013	UK market size, 2013 (2007 prices)	Additional employment, 2013
The Green Economy	7 per cent p.a.	£46 billion	150,000 <sup>33</sup>
Healthcare	Biotech: 8 per cent p.a. Services for an ageing population: 3.4 per cent p.a.	£5 billion £42 billion <sup>34</sup>	111,000
Creative industries	4 per cent p.a.	n/a <sup>35</sup>	150,000 <sup>36</sup>

Sources: DTI; DataMonitor 'Biotechnology Industry Guide'; Oxford Economics; NESTA

## 1. Influence and moral suasion

### The importance of a national strategy

The first step to demonstrating commitment to growth sectors is being explicit about this goal. Government should make clear that innovation and growth are its priorities, outline its plan for support, and make this a recurrent theme in the way it talks about the recession. This is not a question of 'spin': the Finnish example has shown how a national strategy, widely-supported and sensitive to real economic needs, can be effective in leading the transformation of an economy through a period of crisis. Creating a strong narrative plays a practical role in encouraging others to commit to investments and research.

The Scottish Government should seek to articulate its own strategy, using existing powers, and work with the UK Government on a wider strategy with a strong innovation narrative at its heart. The Scottish Council of Economic Advisers should be tasked with developing such a strategy, with strong input from the National Economic Forum which already encompasses business and civil society organisations across Scotland and the UK.

### Regional development policy should build on genuine regional strengths

Much economic coordination in the UK occurs at a regional level, making the role of Regional Development Agencies central to establishing a growth-led industrial policy. But too often, regional development policy has been 'spatially blind': attempting to replicate one region's successes in every other region, ignoring specific regional capacities and histories. For instance, eight of England's nine regional economic strategies prioritise biotechnology or health sciences.<sup>37</sup> Here, the concept of playing to our strengths is particularly relevant. Regional development should focus more strongly on areas that both build on existing capabilities and respond to future demand.

The phenomenon of 'phoenix industries', where innovation has built on the heritage of a strong but declining sector, is a good example of this. The development of the north-east sub-sea engineering cluster was based on a keen awareness both of local strengths (in particular, the legacy of the shipbuilding industry) and of future demand (in this case, the prodigious rise in demand for oil services in the past ten years). A 'regional innovation journey' based on realistic ideas of how a region can meet future demand is a vital step to mobilising the resources needed to spark innovation and growth.

It is important that Scottish Enterprise work more closely with Highlands & Islands Enterprise to

ensure that the regional differences are considered. The Scottish Government's Economic Strategy, and subsequent developments, recognise these differences and must ensure that they are working towards the goal of sustainable economic growth in Scotland.

### Coordination of research spending

The Technology Strategy Board (TSB) has an important role in coordinating, facilitating and funding research into technology-based innovation. Its Innovation Platforms programme, in particular, is a novel means to structure and direct technology research towards major social challenges, with clear parallels to the broad approach being advocated here, while its work on Emerging Technologies and Industries is developing a significant role in technology foresight and intelligence.

The TSB should be awarded greater discretionary funding powers for research projects, and report directly to the National Economic Council in developing and implementing a national economic strategy. This will help ensure that it can better align research across the UK with major social needs, and that the economic leadership at a national level is well-informed about current and likely future technologies.

## 2. Getting regulation right

### Regulation must take a broader view than competition alone

Effective regulation is critical to supporting innovative new growth sectors. For the past decade and more, regulation has focused on ensuring competition, on the assumption that a competitive market would deliver growth and stability. But although competition is important for an innovative economy, other factors matter too, such as the confidence to invest in projects. Our regulatory system must balance the desire for competition against the urgent need to reward innovators.

There is strong precedent for this. The whole basis of intellectual property, on which the edifice of 20<sup>th</sup> century innovation was built, is that competition should at times be suspended to reward and encourage innovative investment. And the global financial crisis has forced a substantial and ongoing shift in regulatory regimes for financial services. A new consensus is emerging that does not seek the maintenance of untrammelled competition as the prime regulatory goal. NESTA has already suggested ways in which regulatory powers can be used to deliver needed public goods, by privileging

innovative investment ahead of strict competition.<sup>38</sup> Developing new growth sectors will require a regulatory environment that can support investment and entrepreneurship even where this weakens strict competition policy. Until they become widely adopted, new technologies in particular may face cost disadvantages compared to those technologies currently in use.

Renewable energy technologies, for example, require substantial policy support if they are to compete with carbon-intensive energy sources. The Renewables Obligation, compelling electricity suppliers to source a rising proportion of renewable energy, has been credited with increasing the proportion of UK electricity generated from renewable sources from 1.8 per cent in 2002 to 4.4 per cent by 2006. But more targeted regulation, including government setting prices for suppliers obligated to buy renewable electricity, has driven a faster rate of adoption in places like Germany and Denmark.<sup>39</sup>

### **Intervention in financial markets must promote innovation and growth**

Fixing business finance is an absolute prerequisite for economic recovery. Current government schemes to assist credit-constrained firms like the Enterprise Finance Guarantee have concentrated on making cheap loans available to smaller businesses. While this will be welcome news to many thousands of small enterprises, NESTA believes that programmes to provide cheap capital to businesses could go further.

New, high-potential companies do not rely on bank loans but instead require risk capital in the form of equity. However, the private equity available for growth businesses has slumped recently: sums raised for venture investing in the UK fell by 70 per cent from 2007 to 2008.<sup>40</sup> NESTA has previously called for the creation of a billion-pound, publicly-backed venture capital fund to meet the demands of innovative firms seeking investment.

Later-stage firms, of course, are able to use debt capital when making investments.<sup>41</sup> Government should consider targeting its financial stimulus measures on innovative companies and areas, focusing on those that contribute to key themes in the economic strategy.

## **3. Focused spending**

### **The UK's network infrastructure must be overhauled**

A modern economy cannot function without a reliable, high-speed network infrastructure. But

infrastructure in the UK is beginning to show strains. Already, average broadband speeds have fallen below those of other developed nations, weakening the UK's ability to participate in the digital economy, and there no plans as yet to deliver nationwide the super-fast broadband access that will be vital to future competitiveness.<sup>42</sup>

Government has noted the importance of super-fast broadband.<sup>43</sup> As the Scottish Government's economic strategy makes clear, it is important that different levels of government work better together, as well as with external stakeholders, to build better networks within Scotland and to use those to build better links abroad. The Broadband Stakeholder Group has estimated the cost of providing a widespread, super-fast 'fibre-to-the-cabinet' system at £5 billion.<sup>44</sup> Yet the Government remains committed to upgrading old-school network technology, with a third runway at Heathrow costing many times this price.

### **Intelligent procurement can drive sector creation and innovation**

Government spends considerably more on commissioning and procurement than it does on innovation. Ensuring that this spending promotes innovative growth should be a priority.

Government procurement has helped create new sectors in the past. Silicon Valley, for example, grew in part as an off-shoot from substantial US defence spending in southern California;<sup>45</sup> similar military spending in the Korean Peninsula helped support Japan's recovery to major power status.<sup>46</sup> Medical research spending by public and non-profit institutions provided the essential fuel for the 'biotechnology revolution'.<sup>47</sup>

The UK Government has attempted to push the need for innovative procurement through the Office of Government Commerce, but this process needs to move faster.<sup>48</sup> The Scottish Government's steps to create a single procurement portal are a step in the right direction to make it easier for firms to win business and develop. More needs to be done in this area when considering wider projects.

Government should learn from best practice overseas in using procurement to drive innovation:

- The South Korean New Technology Purchasing Assurance scheme requires that government agencies and public institutions commission SMEs to develop new technologies with the assurance that eventual products will be purchased, reducing the burden of research risk from innovative SMEs. The Small and Medium-sized Business Agency (SMBA) finances the SME research, with public

institutions agreeing to buy the technology for a fixed period of time. By the end of 2005, the SMBA had supported 80 'technological development products' and is looking to expand the scheme further.<sup>49</sup> HM Treasury should use a significant proportion of its loan assistance to small businesses in providing such a scheme.

- The US Small Business Innovation Research (SBIR) programme is widely admired for its effectiveness in promoting innovative procurement from SMEs.<sup>50</sup> Each year, on average, over 4,000 awards are made to small businesses under the scheme, with a value of over \$22 billion.<sup>51</sup> These are awards designed to procure new products and services, with procuring agencies. The critical features of the SBIR are the use of regular procurement rounds, at pre-specified dates, allowing interested firms to see (in a standard format) what opportunities are available; and the use of a two-part contract structure, in which a successfully bidding firm delivers an initial, early-stage development and can then have preferential access to a later, delivery-stage contract. This lessens the risks associated with innovative procurement.<sup>52</sup> Ongoing reforms to the UK's Small Business Research Initiative should aim to model it as closely as possible on the US scheme.

### **A growth-based recovery plan is more affordable than alternatives**

Focusing industrial strategy on innovation is not just good for economic growth: it is also cheaper than other forms of intervention. The support that is implied by focusing on high-potential, innovative sectors is relatively cheap but can have a very substantial impact, provided it is well-targeted. We look in-depth at a particular growth area, video games, a high-growth subset of the creative industries, and show in more detail the cost of support for innovation and growth. To take one example, in the Appendix to this document we have looked in-depth at the implications of a growth and innovation-based policy on a sub-sector of the creative industries area. The cost of better targeting support on this sub-sector, which contributes £1 billion to UK GDP, would be modest: at most £10 million, much of which could be redirected from existing spending.

Focusing on growth and innovation is cheaper than more generalised support. We have already noted the low cost of next generation broadband compared to older network infrastructure, like airport extensions.

Our proposed interventions would focus existing support and investment more tightly on key sectors, in the context of clear national economic strategy for growth. Government funding is still vital, but would amount to a fraction of the cost of current 'fire-fighting' interventions in the financial sector and elsewhere.

The total cost for a targeted, sector-led package would be an order of magnitude less than the £120 billion that has been estimated as the cost of measures to support the financial sector,<sup>53</sup> and even the £5 billion needed to fund widespread broadband compares favourably with the £2.3 billion that has been used to support one sub-sector of UK manufacturers, the automobile industry. The costs of this package can be financed by redirecting and bringing forward funding, or, in the case of fibre-optic broadband, significantly reduced through NESTA's innovative spectrum-for-speed funding proposal.<sup>54</sup>

### **Conclusion**

Refitting the UK's economy after the slump in the financial services will require a clear sense of direction on the part of government. Finding new sectors to drive economic growth is now essential; yet the market alone will be unable to create new growth sectors in a severe recession. The case for an explicit and credible recovery plan is compelling.

By learning the lessons of the past, drawing on best practice elsewhere, and heeding the voice of demand, we believe that a recovery plan for the UK can build on its genuine strengths as an economy and establish new, dynamic areas for future economic growth.

# Appendix

## What would a sector-specific support policy look like?

### A video games example

With any policy, the devil is in the detail. So when assessing the costs of a growth-focused industrial policy, it is instructive to consider how it would work in a specific sub-sector. We have chosen the video games industry, a high-growth component of the UK's creative economy.

The creative and digital content industries will be a vital future source of economic growth, covering a wide range of economic activities, including film, video games, fashion design, and music. Their total contribution to UK Gross Value Added (GVA) in 2006 was £57 billion. NESTA's own forecast is that a 4 per cent average annual growth rate can be achieved with effective government support, boosting creative GVA to £85 billion by 2013, and creating 150,000 new jobs across the UK.

Video games, in particular, are an example of a rapid-growth, highly innovative sector where the UK is a global leader.<sup>55</sup> The sector is large, with a GDP contribution of £1 billion, equivalent to the size of the UK film industry. Video games markets are projected to grow at a compound annual rate of 10.3 per cent between 2008 and 2012, compared to an average of 6.6 per cent for all media and entertainment markets.<sup>56</sup> UK video game developers, which in 2008 ranked third in global sales after the USA and Japan, are extremely well positioned to benefit from the rapid expansion in video games markets.

Scotland's games industry is one which has historically been strong and which could be a key sector for

the future but has suffered from a lack of targeted support which means it, and the UK industry as a whole, is in danger of losing its strong position.

NESTA has identified a set of areas in which the UK government could support this games sector, to remove barriers to innovation and growth.<sup>57</sup> A sector-specific support strategy for the video games sector should include:

- A simplification of the existing R&D tax credit system to improve its benefits for video games studios whose highly innovative activities are imperfectly captured by formal measures such as R&D expenditure. Doubling current levels of access to the scheme for smaller, independent developers who often find it difficult to apply<sup>58</sup> would have an estimated cost of £9.49 million.<sup>59</sup> R&D tax credits should be given before production commences to incentivise development of new products.
- Prioritising video games in current initiatives to support innovation, such as the Technology Strategy Board's (TSB) Creative Industries R&D Fund. Special attention should be given to particularly promising areas, such as online gaming and serious games for training purposes. Additionally, the TSB should set up a video games prototype fund to improve the UK capabilities at generating original Intellectual Property (IP), a crucial source of competitive advantage in the sector. A similar fund available in France was worth £2.4 million in 2007.<sup>60</sup>

- A 'kitemark' for video game courses to improve the industry-readiness of their graduates. This initiative, to be managed by Skillset, the Sector Skills Council, alongside the Scottish Funding Council, should link a course's funding to its relevance for the sector.
- A Games Education Fund to finance the placement of lecturers in video games studios, as well as research fellowships. This initiative will help strengthen Knowledge Transfer flows between universities and the video games sector. The Engineering and Physical Sciences Research Council (EPSRC) should increase its commitment to funding research with applicability in the sector by making it a priority area as part of its Digital Economy Programme. Special emphasis should be placed on the funding of research projects with Open Source outputs that can be extended, adapted and improved by video games studios themselves.
- Creating a Centre of Excellence on Educational Games funded by The British Educational Communications and Technology Agency (BECTA), and the Department for Children, Schools and Families (DCSF), following the example of the US Department of Education's Educational Development Centre and the Scottish Government's £3 million Centre for Computer Games Excellence.<sup>61</sup> This initiative should be part of a broader effort to define a shared vision of the role of educational games in UK classrooms.
- Rolling out of student placements such as the highly successful 'Dare to be Digital' prototype competition across the UK. This initiative, sponsored by the University of Abertay in Dundee, provides talented students with the opportunity to showcase their creativity and skills in front of prospective employers. Wider use of placements encourages HEIs to simulate the workplace environment more successfully.

cent of their production costs for projects that pass a 'cultural test', with an estimated cost of £10 million.<sup>63</sup> The UK video games sector has estimated that a 'cultural tax credit' to support their activities would cost £28-32 million per year.<sup>64</sup> This is a cost of up to £42.4 million for a sector currently with significant growth prospects.<sup>65</sup> While calls for industry-specific tax credits fall outside the scope of this paper, it is instructive to compare this cost to that of the tax relief scheme currently available for the UK film sector, which amounted, from January 2007 to March 2008, to £104 million.<sup>66</sup>

This set of measures would have an aggregated cost of £10.14 million, and would contribute to the improvement of the competitiveness and innovative potential of the UK video games sector. Some of them do not require further investments, but a realignment of priorities by bodies such as TSB or EPSRC.

Some commentators have suggested going further. Other countries such as Canada and France have already decided to invest in video games as a future motor of growth, and are furnishing their development sectors with generous tax credits and incentives.<sup>62</sup> An EU-approved scheme will for example enable French studios to claim back up to 20 per

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Published: March 2009  
DC/PP02