The Royal Society of Edinburgh

# The Creation of Wealth

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# The Royal Society of Edinburgh wishes to acknowledge the support of

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# and thank the Organising Committee:

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*Chairman, amf Insight Ltd*

**Mr J F McClelland CBE FRSE**
*Chairman, Rangers Football Club*

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# Overview

"For the last ten years, the rate of growth in the Scottish economy has continued to fall below the rate for the UK as a whole. Manufactured exports are down and the number of new business start-ups remains amongst the lowest of the UK regions. What can be done to remedy the situation and create a vibrant and successful Scottish economy?"

# Morning Session

## INTRODUCTION

**Gavin McCrone** welcomed delegates by noting the way in which the work of The Royal Society of Edinburgh has always sought to pursue work on social sciences and public policy alongside scientific enquiry. There were positive signs in the Scottish economy: output per head was on a par with the average of the 15 states in the pre-2004 EU and was well above that of the enlarged EU; the service sector, now 70% of the Scottish economy, was very buoyant; employment levels were very high; and for the first time in many years there was a net immigration to Scotland. But in the last ten years economic growth had fallen behind that of the UK as a whole - in 1996 Scottish GDP per head was 100% of the UK average, but this had now fallen to 96%. The main cause for concern was manufacturing, which had grown well until 2000, but had fallen by 13% since then, largely due to the downturn in the electronics sector. This had wider implications for the Scottish economy as a whole, given the export orientation of the sector, and Scottish exports had fallen by 20% in recent years. Competition from the new EU Member States for foreign investment would be intense. It was therefore important to seek to achieve more from internal efforts. The Scottish business birth rate had been among the lowest of the UK regions, but the climate was changing and there were remarkable success stories. The key was to focus on skills development and having the right environment and infrastructure to support the development of entrepreneurship.

## SESSION ONE - ROLE OF GOVERNMENT

**Wendy Alexander** introduced her talk with quotations from analyses by Government economists of the challenges facing the Scottish economy. In 1950 Sir Alec Cairncross had identified serious structural weaknesses, including dependence on old industries, out of date infrastructure and an appalling urban environment; whilst by 1980 Gavin McCrone himself had noted that although there was a major problem in providing employment due to the recession in traditional industry, there were also positive signs, including a modernised infrastructure, an improved environment and a strong representation of new industries. 25 years on there were many positive things about the Scottish economy: employment levels were higher than those in 23 of the 25 EU countries; Scottish growth was above that of France and Germany; there was net in migration; new investments were coming into the economy; and the Executive was starting to set a business- focused agenda including rates and planning reform. However, there was a significant challenge ahead for policy-makers, since governance in Scotland was still in its infancy and capability to develop effective governance for growth needed to be built up. The main focus of this talk was on the lessons from the recent Fraser of Allender series diagnosing the growth and governance challenges facing Scotland entitled *New wealth for an old nation*. The focus was on identifying what we do best in the world rather than fixing what we were not very good at. The five 'big ideas' which emerged were:

- Tackling the low birth rate and net migration figure - we need to be much more ambitious than the 600 visas target for Fresh Talent, even if that is a good start
- Highest returns in preparing the workforce for the new economy come in the earliest years - we should develop an "I can" leadership in Scottish education and promote the development of both cognitive (including the basics) and non-cognitive skills
- Raising the innovation rate through openness, technology transfer and collaboration
- Recognising that cities are motors of national growth, that scale matters and that radical new approaches are required to develop coherent planning, housing, transport infrastructure and connectivity
- Raising public sector productivity - the efficiency of the public sector in Scotland was less than that of the UK as a whole; we need contestability and competition rather than top- down performance targets and monopolistic structures.

The public sector should articulate a clear vision of reform, stimulate and nurture cooperation, drive best practice and organisational change and support regulatory reform. The private sector should act as if it was twice as competitive as it is, seek out best practice and promote innovation and collaboration and be ruthless about the benefits it derives from IT. Everyone has a role to play in lighting candles of hope for the future, as a far more uplifting legacy this generation can leave for the future, rather than sorry pessimism.

In response to questions, Wendy did not see any economic connection between the system of funding of the Parliament and public sector productivity, saying that the funding issue was more a matter of political choice. She agreed that Scotland did benefit considerably from its natural resources in making it an attractive place to live and work.

## SESSION TWO - FINANCE

**Dennis Stevenson** told of his recent impressions in returning to Edinburgh after 40 years away: from a city characterised by deference and dependency it had been transformed into a vibrant city with world-class assets. The transformation of Glasgow had been equally, if not more, fundamental. The financial sector had played a key role in the process and we now had two world-class banks and other major players, out of all proportion to the size of the Scottish economy itself. The financial sector employed 10% of the Scottish workforce and had grown by 37% in the last five years. A key characteristic was that it was in no sense a branch factory - quite the opposite; it employed, at the heart of major businesses, a range of bright and talented industry people who were drawing up the financial products of the future and the systems to manage them in an increasingly efficient manner. The Scottish-based banks had the lowest cost/income ratios of the main UK banks. HBOS itself had chosen to be headquartered in Edinburgh because of the competitive nature of the local economy, the infrastructure; the competitiveness of the workforce and the access to able graduates from the outstanding universities.

Dennis then argued that more needs to be done to exploit the potential of devolution to support business, especially in relation to improving transport infrastructure within Scotland and promoting a culture of entrepreneurship. On the latter point he agreed that banks needed to do more to support new businesses and challenged policy-makers and private sector leaders to work with them to create the right culture for a dynamic business base. The Scottish banks were better than their peers in supporting Start-ups and leveraged buyouts, but they could only respond to the needs of the market - by working together we could create a culture where business growth and risk-taking were actively encouraged and fostered by all involved.

## SESSION THREE - INDUSTRY I

**Jim McColl** described how, following a management buy-out in 1992, he and his team had transformed Clyde Blowers from being the smallest of the eight world suppliers of boiler cleaning devices to the world leader as the Clyde Bergemann Group, providing boiler efficiency services and material handling equipment to the power, paper and pulp industries. From a Scottish base it had acquired most of its competitors, rationalised activities across the group, simplified its product line and reduced its workforce, leading to a $120 million turnover and a $10 million profit. Although the overall size of the workforce in Scotland had fallen from 120 to just over 70, the presence of the 18-strong stratetegic and financial leadership team in Scotland for the group provided significant benefits to the Scottish economy, through spending on corporate, financial and advisory services. A current focus of activity was through joint ventures and direct investment in new businesses in China, where the market for environmental technologies in coal power production was growing at a fast rate.

In response to questions, Jim encouraged the Scottish press to be more appreciative of the impact global companies like his have on the Scottish economy. A key focus of his company was on technology innovation and it had an excellent record of cooperation with Scottish universities through schemes such as scholarships and the funding of researchers. But he regretted how difficult it can be for private industries operating on tight budgets to access support from Government for research and development projects, for example, due to bureaucratic hurdles imposed by the Inland Revenue.

## SESSION FOUR - ENERGY

**Brian Wilson** said that Scotland, as an energy rich nation, needed a diverse and risk-averse mix of future energy supplies. The 2003 energy review had forecast that electricity generation would become increasingly dependent on imported gas. The dangers that this dependence involved were being exacerbated by the failure of Government, including the Scottish Executive, to consider the future of nuclear energy and the recent decision by Scottish Power to close Longannet and Cockenzie coal power stations within a decade. Fostering renewable energy development through properly funded and coordinated project finance was essential to the overall mix, but it would not substitute for the planned reduction in nuclear and coal generation. He called for the Scottish Executive to make a serious input to the new UK energy review, which should look seriously at the following issues:

- Developing clean coal technologies; we could not afford to write off Longannet
- Nuclear power exists and is a source of carbon-free generation - we should note the conclusion of Finland, a similar-sized country, that new nuclear power should be part of the future energy mix. Saying that we cannot make decisions on the future of nuclear energy until the waste management problem is solved, as the Executive is doing, is a delaying tactic, not a policy.

- The Executive should work with all parts of Government and the public sector to make sure that renewable plans are turned into viable projects and implemented - we all needed to be working in the same direction to make the ambitious targets a reality. Scotland should, for example, develop an offshore wind programme and do more on biomass.

In response to questions, Brian agreed that Combined Hear & Power (CHP) was an attractive option, but it was not economic when electricity prices are low and gas prices are high. He called on political leaders to show more courage in the debate on future energy needs, to set a proper context for debate and to ensure that options are not closed down. He also stressed the need to focus the debate on deliverable, rather than futuristic, technologies.

**SESSION FIVE - EDUCATION I**

**Alan Langlands** explained the contribution Scottish Universities made to the Scottish economy. The core mission was to educate and carry out research and in this they earned £360 million of international exports, some 9% of the contribution of the service sector in Scotland as a whole. Total spend by Scottish Universities was some £1.86 billion, of which only a third came from the grant from the Funding Council; £1.3 billion of this was spent on Scottish goods and services and it was estimated that universities contributed some £1 billion in added value to the Scottish economy and some 4% of GDP. One in twenty people was studying or working at Scottish Universities. Scottish Universities also made a significant contribution to the Scottish skills base by attracting highly competent staff and students from abroad. Universities also contributed to the development of Scotland's research base - some 17% of patents registered by higher institutions in the UK came from Scotland, and Scottish universities received some 50% more research funding per capita than those in England, but they could do even better than this through a more effective link with industry.

Sir Alan gave as an example of good practice the School of Life Sciences at Dundee University. From the Department of Biochemistry in 1975, with 11 staff, it had developed, with the full support of the University, to a Faculty with more than 800 people of 60 nationalities. The key to its success, alongside its excellent record in attracting the best staff and in conducting ground-breaking research, was effective technology transfer and an effective means of managing intellectual property with a number of different commercial partners. A mix of vehicles was used to collaborate with industry, including consortia, licensing and spin-out companies. It was important to focus links on the US market as well as on Europe, since the US was currently responsible for 64% of the international marketplace in product research and development. One example of such success was the consortium founded by the Division of Signal Transduction Therapy, which had built a model to allow for insights into the effect of different protein phosphorases and kynases on cells. A number of different pharmaceutical companies were using the model to test their own approaches without infringing intellectual property rights. A new project was to develop a drug development plant to tackle the pharmaceutical problems of developing countries, which were often ignored by the big companies.

In response to questions, he noted that the key was to have a long-term vision, to stay true to scientific principles and practice, and to learn from what works and what doesn't work. He also drew attention to a collaborative project amongst Scottish universities to promote e-learning, citing the example of medical education, which was already delivering real benefits in terms of overseas sales for Scottish universities.

**SESSION SIX - INDUSTRY II**

**Douglas Anderson** explained that by background he was an entrepreneur with a strong interest in technology. The origin of Optos, his current project, lay in an insight that detecting asymptomatic eye disease, which also gives indications of other diseases, is difficult - the main technology in use had only an effectiveness rating of 29%. He had developed a new market in the United States for a more effective but more expensive technology solution (with 75%- 80% effectiveness) by developing a new business model which minimised the cost to new users by requiring no capital payment or maintenance costs and free staff training. The project had taken some 13 years to develop from the research stage through to production, which had only rolled out in year 9, but by year 13 (this year) some 4,000 doctors were doing some 260,000 tests a year and the project was in profit.

He stressed the importance of the business model in providing a way for new technologies to enter the market. He looked forward to further growth in the USA and other markets and to spin- offs into other areas. He did not expect, however, that the UK would be an early market for roll-out and regretted the failure of the National Health Service, as highlighted by a recent report in England (which was equally applicable in Scotland), to promote better care through new technology and to cooperate with indigenous entrepreneurs developing new technologies.

**PANEL DISCUSSION**

The key points which came out of the morning panel discussion were as follows:

- Ownership of intellectual capital (broader than property) was the key to maintaining effective company development in a globalised environment. The focus of support should be on companies capable of growing in this way.
- That said, many success stories did not receive grants or other support from the public sector. The focus of any such company had to be on the management model needed to grow its market share.
- The US policy of Government research programmes promoting commercial spin-off for US companies was contrasted favourably with the UK experience, where the reluctance of Ministers and civil servants to "pick winners" was criticised.
- It was true that the UK and Scottish media did not act in a way which made risk taking in Government easy, but there were ways in which risk in one project could be "buried" in a portfolio which took a long term approach. In that sense, the recent press speculation that Scottish Enterprise was seeking to 'clip the wings' of the Intermediate Technology Institutes seemed an unfortunate reversion to old practices.
- It was generally agreed that the NHS needed to lower its barrier to entry and to be more supportive of local entrepreneurs developing new technologies and treatments.
- The successes of the life sciences sector should be spread into other areas such as physics and engineering, but it was acknowledged that work would have to be done to offset the comparative disadvantages these sectors face, such as the availability of private and third sector funding and the lower attractiveness to students.

## Afternoon Session

**SESSION SEVEN - EDUCATION II**

**Jane Bower** described the way the Innovation Support System worked in universities. The most important macroeconomic contribution universities made was in developing graduates for jobs - at present Scotland lost something like 50% of graduates in key sectors such as engineering and medicine. An important policy aim should be to do more to keep them in Scotland and to attract back those who have travelled to work elsewhere. Nevertheless, Government at both Scottish and UK levels is placing increasing importance on innovation support and mechanisms such as spinouts, Start-ups and licensing are making a significant, if still small, contribution to economic development. Schemes such as CONNECT, SMART, the RSE/SE Enterprise Fellowships and mechanisms such as Business Angels, Professional Advisers and the Co-investment Fund are all having some effect in supporting such activity. There are no reliable global statistics as yet on the scale of this contribution, but anecdotal and sectoral evidence suggests some successes - for example it is estimated that some £80 million of investments have been made in companies which have RSE/SE Enterprise Fellows on attachment. Investment of this type brings about job creation, investment in the wider local economy and a broadening of the local technology base. Nevertheless it should be noted that universities themselves do not expect to make large profits out of such schemes and that most can hope at best only to break even.

Key gaps at present in provision include:

- A lack of support for the creative industries
- There is less support available for such Start-ups outwith the academic sector
- Small firms lack necessary management skills
- The business environment for such Start-ups is not as conducive as in other areas such as Boston and Cambridge (USA), where large firms provide a ready market for small businesses and support for the core services they need
- Universities and support agencies should standardise the procedures for setting up such initiatives and provide a more realistic valuation of academic technologies
- Government should stick to simple policies and schemes which work and not keep on constantly recreating the wheel

In response to questions, Jane agreed that with 51% of Scots now going to university, overall standards were lower than before, when a much smaller percentage

went, but there were plenty of outstanding performances as well. A key gap in provision was the lack of a technology venture capital firm in Scotland; this needed to be addressed as a priority. There should be better communication on the successes of spin-outs so the business environment becomes more welcoming to them. She agreed that we also needed to emulate at least some of the risk taking culture in the USA.

## SESSION EIGHT - BIOTECHNOLOGY

**John Brown** outlined the nature and work of the Bio industry sector in Scotland. He noted that it was fully integrated into the world Bio industry market, dominated by the US, which although it was now worth $51 billion and investing $21 billion in research, was still operating at a net loss. That said, profitability was now in sight in the US as revenue was coming through from product sales and the growth potential was very high. Of the 25, 500 people employed in life sciences in Scotland, only 20% currently work for companies, so there is work to do to translate Scotland's strong reputation for academic excellence in biosciences into commercial success. It was important to note that manufacturing and packaging take place in a highly regulated environment, so skills and track record are important and the industry is not easily mobile - Scotland had now developed a range of companies skilled in contract manufacturing and clinical trials and was attracting overseas investment because of this. A particular strength in Scotland was also medical technology and diagnostic companies, which were not only based in the Central Belt but also in more distant locations such as the Highlands.

The focus of the sector development strategy for Bio industry was to develop a sustainable life sciences sector that was spread throughout Scotland and was attracting investment support from local banks and venture capital companies. It was building on the key strengths of the Scottish sector, which lie in drug discovery, medical technologies, regenerative medicine (where Edinburgh was well placed to be the European leader), biomedical work, contract research, diagnostics and clinical trials. Given its importance to the industry, marked by a greater spread of clinical trials throughout the population - and the fact the evidence showed that people who were on medical trials tended to be more healthy than those who were not, he saw an opportunity to strengthen Scotland's positioning in the global bio industry. For the future he saw a need for a greater emphasis on creating the right environment for business growth, a development of the right skills base for all parts of the industry, more funding being available to young companies and more engagement by NHS Scotland with Bio industry.

In response to questions, Dr Brown agreed that Scotland would do well to emulate the joined-up approach to the commercialisation of research taken in the USA and called on the Scottish Executive Health Department to appoint someone at very senior level to facilitate, in a holistic manner, industrial collaboration with the NHS.

## PANEL DISCUSSION

The key points which came out of the afternoon panel discussion were as follows:

- Innovation should be placed at the top of the list of priorities.
- There was a dispute over the extent to which total spending on research by universities contributed to economic growth - some people believed that it did and that more money should be spent on research, whilst others believed that the way innovation was identified and the research and development chains were managed were more important. Pure research had less direct economic benefit than applied research.
- Collaboration between companies is increasingly being pursued to give them access to innovative models and techniques, but only if it preserves their own intellectual property.

## CONCLUSIONS

In conclusion, **Gavin McCrone** drew out the following issues for subsequent consideration:

- Although manufacturing had declined in recent years, there were nevertheless real success stories which gave grounds for optimism. The challenge now was to reproduce similar success stories across the economy. We needed more globalised companies such as Clyde Blowers and for people to seize the real opportunities that lay in new industries such as Bio industry.
- Education policy needs refinement to place more emphasis on basic skills, vocational training and subjects such as maths, sciences and modern languages.
- The business environment for the financial sector was strong and Scottish cities were proving an attractive place to live and work in world terms, although more could be done to improve the infrastructure and the skills base. But we needed to think through the implications of possible takeovers of Scottish-based companies.

- Current energy policy, or the lack of one, was absurd. We needed a proper debate on the future of key energy sources such as coal and nuclear.
- The Optos story showed that persistence was necessary to win through. The Health Service needed to take more interest in new products and techniques.
- Universities were already playing an important role in economic development and a joined-up approach could achieve more, retaining and attracting back more graduates in specialist disciplines, and leading to more innovation.
- Government had launched too many complicated initiatives and should instead pursue more simplicity and consistency.
- We need to move from being a risk averse society to one which actively encouraged risk taking. Public attitudes to entrepreneurship needed to change, as did the overall approach of the public sector to encouraging entrepreneurship.

# Appendix One
# Programme

**09.30** Registration and Coffee

**10.00** **Chairperson Welcome and Overview**

Chairperson: Professor Gavin McCrone CB FRSE, *General Secretary, The Royal Society of Edinburgh*

**10.20** **Session 1 – Role of Government (in Wealth Creation)**

Wendy Alexander MSP

**10.40** Q & A

**10.45** **Session 2 – Finance**

**Scotland's Finance Sector**

Dennis Stevenson CBE, *Chairman, HBOS plc*

**11.05** Q & A

**11.10** **Session 3 – Industry I**

Jim McColl OBE, *Chairman and Chief Executive, Clyde Blowers*

**11.30** Q & A

**11.35** Coffee Break

**12.00** **Session 4 – Energy**

Rt Hon Brian Wilson

**12.20** Q & A

**12.25** **Session 5 – Education I**

Sir Alan Langlands FRSE, *Principal and Vice-Chancellor, University of Dundee*

**12.45** Q & A

**12.50** **Session 6 – Industry II**

Douglas Anderson, *Founder and Vice-Chairman, Optos Plc*

**13.10** Q & A

**13.15** **Open Forum/Panel Discussion**

**13.45** Lunch

**14.45** **Session 7 – Education II**

**The Innovation Support System**

Professor Jane Bower FRSE, *Chair in Enterprise Management, University of Dundee*

**15.05** Q & A

**15.10** **Session 8 – Biotechnology**

Dr John Brown, *Chairman, BIA Scotland*

**15.30** Q & A

**15.35** **Coffee Break**

**15.55** **Plenary Forum / Panel Discussion**

**16.25** **Closing Remarks**

Professor Gavin McCrone CB FRSE, *General Secretary, The Royal Society of Edinburgh*

# Appendix Two
# Speakers' Biographies

**Wendy Alexander MSP**

Wendy Alexander is MSP for Paisley North. A graduate of Glasgow and Warwick Universities, she holds an MBA from INSEAD and previously worked for Booz, Allen & Hamilton. She has served as Special Adviser to Donald Dewar and also in the Cabinets of all three First Ministers. She is currently a member of the Parliament's Finance and Education Committees and Visiting Professor at Strathclyde University. Recent publications include *Chasing the Tartan Tiger (2003); New Wealth for Old Nations (2005) and Donald Dewar, Scotland's first First Minister (2005)*.

**Douglas Anderson**

**Optos Plc**

An engineer by training Douglas is founder and Vice Chairman of Optos plc a company that designs, manufactures and supplies advanced retinal imaging systems particularly into the US primary eyecare Market. Optos plc today commands a leading position in the primary eyecare market in the US. Having grown rapidly in recent years (listed in *the Sunday Times* Tech Track 100 fastest growing companies for last 3 consecutive years) with revenues for the last fiscal year of $48m and a projected current year revenue of $68m.

Douglas is also Chairman of Crombie Anderson Associates Ltd, a long-established and profitable multi-disciplinary design consultancy employing 30 full time designers and engineers offering services in business communications, and technology product development focusing on healthcare in particular.

Douglas has extensive experience in the successful management of the product development process and in building early stage companies in the healthcare field. He is the founder of four high-tech start-up companies, two of which are operating in the medical technology arena. He has been involved in raising over £40million in private and institutional funding, including taking one company to the AIM.

**Professor Jane Bower FRSE**

**Chair in Enterprise Management,**

**University of Dundee**

Jane Bower holds the Chair in Enterprise Management at the University of Dundee. Through research, teaching and consultancy she has been involved for many years in the management of technological innovation in a number of international, high technology industries. For the last six years she has delivered the business training programme for the RSE/SEn successful Enterprise Fellowship Programme. She worked initially for 15 years as a biomedical researcher at Stanford and Edinburgh Universities, and at the MRC Human Genetics Unit. She became increasingly involved in the process of developing novel technologies in the UK, USA and Japan, directly and through consultancy and research. The life science industries have been the main but not exclusive focus. During two years in the Oil & Gas Industry she designed and raised funds for the Nova oilfield technology venture fund based in Aberdeen, and since 1999 she has worked with young firms in a wide range of industries. She was a member of the Scottish Science Advisory Committee 2002-4, a member of the Scottish Higher Education Funding Council 2001-5 and is currently the Chairman of the Scottish Stem Cell Network.

**Dr John Brown**

**Chairman, BIA Scotland**

Dr Brown is an independent Non-Executive Director. He currently Chairs the Governing Council of the Roslin Institute in Edinburgh and is Chairman of Scottish Biomedical. Dr Brown is a Non-Executive Director of a number of private and public biotech companies including Ardana plc, Protherics plc and Cambridge Antibody Technology plc . He sits on the Advisory Board of the Life Sciences ITI in Scotland. Dr Brown is a member of the DTI

Technology Strategy Board and the DTI Biotechnology Leadership Council. He is also Chairman of BIA Scotland.

Until December 2003, Dr Brown was Chief Executive of the FTSE 250 biotech company Acambis plc, a leading producer of vaccines to treat and prevent infectious disease. Dr Brown joined Acambis as Finance Director in 1995 and was appointed CEO in 1997. At Acambis he was responsible for the acquisition of OraVax Inc, a Boston, US-based vaccines company, together with a £23 million rights issue and a $40m strategeic alliance with Baxter International. Dr Brown managed Acambis through the UK IPO process and most importantly on to profitability.

**Sir Alan Langlands FRSE**

**Principal and Vice-Chancellor,**

**University of Dundee**

Alan Langlands has been the Principal and Vice-Chancellor of the University of Dundee since 2000. The University is recognised as a world leader in biomedical research, the UK's first ranking university for teaching quality and a key contributor to the economic development of Scotland. In the past five years, turnover has risen by 40% to £150m pa; the value of research grants and contracts has risen to an average of £50m pa and the number of spin-out companies has doubled.

Alan maintains a wide portfolio of interests relevant to healthcare and higher education. He recently led the *Gateways to the Professions* report to be published in autumn 2005 and he chaired the *Commission on Good Governance in Public Services* published in February 2005. He chairs a steering group representing 25 medical schools worldwide, committed to developing IVIMEDS, an "international virtual medical school" which aims to achieve maximum benefit from new educational technologies, and is convener of the Universities Scotland Funding Policy Group. He also chairs the UK Biobank's Board of Directors, overseeing a major £62m genetic epidemiology project on behalf of the Wellcome Trust and the Medical Research Council.

As Chief Executive of the National Health Service in England from 1994-2000 and the Secretary of State's principal policy adviser for the NHS, he was accountable to Parliament for the effective stewardship of a £42bn revenue budget. He has an international reputation in the development of healthcare policy and as a strategic manager of health services and has advised in many countries including Russia, the USA, Canada and China. He received a Knighthood in the Queen's Birthday Honours list (1998) for his services to the NHS, is a Fellow of the Royal Society of Edinburgh and has honorary fellowships from four medical Royal Colleges. He is an honorary Professor at the University of Warwick Business School.

**Jim McColl OBE**

**Chairman & Chief Executive,**

**Clyde Blowers Ltd**

Jim McColl started his career as an engineering apprentice with Weir Pumps in Glasgow. After six years in engineering and six years of part-time study he left work to take up full-time study for a BSc degree in Technology and Business Studies on a four year course at Strathclyde University. After achieving a BSc degree with Honours in 1978 he returned to Weir Pumps where he remained for three years while studying part-time for a Masters Degree in Business Administration.

In 1992 he bought 29.9% of Clyde Blowers plc, a small engineering company with a full listing on the London Stock Exchange. Prior to purchasing his stake in Clyde Blowers it had a market capitalisation of £2.2 m. In 1999 Jim led a management buy-out of Clyde Blowers plc to take the Company private. Over the past 10 years Clyde Blowers has grown at an annual rate in excess of 35% and has developed into a portfolio of truly Global Engineering companies.

**Dennis Stevenson CBE**

**Chairman, HBOS plc**

Lord Stevenson of Coddenham is Chairman of HBOS plc and very recently retired as Chairman of Pearson plc. He is a Non-Executive Director of Manpower Inc, Chairman of the House of Lords Appointments Commission and Chairman of Aldeburgh Productions Ltd. He was Chairman of the Trustees of the Tate Gallery 1988-1998 and until September 2000 he was the Prime Minister's

Special Adviser on the application of ICT in education. He currently sits on the cross-benches in the House of Lords.

**The Rt Hon Brian Wilson**

Brian Wilson stood down at the last election after 18 years as Member of Parliament for Cunninghame North. Following the election of the Labour Government in 1997, he held five ministerial posts - each of which gave him an involvement in energy issues and particularly the North Sea. He was the Scottish Industry Minister in 1997-98 and the UK Energy Minister from 2001-2003. When he announced his intention to leave Parliament, the Prime Minister asked him to act as his Special Representative on Overseas Trade, with a particular focus on energy issues. Although no longer an MP, he has been asked to continue in that role. In addition, he is now involved in advising several energy companies – particularly in the renewables sector - and, just for a bit of light relief, has recently been appointed as a non-executive director of Celtic Football Club.

# Appendix Three
# Participant List

**Dr J G Adamson CBE FRSE**
Chairman, amf Insight Ltd

***Ms Wendy Alexander**
MSP for Paisley North

***Mr Douglas Anderson**
Founder and Vice-Chairman, Optos Plc

**Mr George Boag**
CEO, Targeting Innovation Ltd

**Mr Andrew Bolger**
Scotland Correspondent, *Financial Times*

***Professor Jane Bower FRSE**
Chair in Enterprise Management, University of Dundee

**Professor David Boxer**
Vice-Principal (Research and Enterprise), University of Dundee

**Ms Moira Boyd**
Consultancy Manager, Edinburgh Research and Innovation Ltd

**Ms Jacqueline Brandon**

**Mrs Mairead Brodie**
PR Executive, Intermediary Technology Institutes (ITI) Scotland

***Dr John Brown**
Chairman, BIA Scotland

**Mr Martin Burke**
Director, Emotion Records Ltd

**Mrs Fiona Callison**
Head of Corporate Affairs, Intermediary Technology Institutes (ITI) Scotland

**Dr Kevin Cullen**
Director, Research and Enterprise, University of Glasgow

**Ms Alison Culpan**
Government Affairs Manager

**Mr Edward Cunningham CBE FRSE**
Chairman, Business Options Ltd

**Mr Hamish Davidson**
Chairman, Rockpools

**Dr Avril Davidson**
Head of Secretariat, Scottish Science Advisory Committee

**Ms Susan Deacon**
MSP for Edinburgh East and Musselburgh

**Ms Catherine Docherty**
Director, Farm7

**Mr Paul Eisenberg**
MBA Student, University of Edinburgh Management School

**Mr Martin Ellis**
Head of Group Economics, HBOS Plc

**Mr Ashley Evans**
Chief Executive, Electronics Scotland

**Professor A I Ferguson FRSE**
Deputy Principal, University of Strathclyde

**Mr Iain Ferguson**
Policy Executive, Confederation of British Industry (CBI) Scotland

**Mr Ian Fraser**
Deputy Business Editor, *The Sunday Herald*

**Dr Louisa Gairn**
Knowledge Transfer, University of Edinburgh

**Dr Andrew Goudie FRSE**
Chief Economic Adviser to the First Minister, Scottish Executive

**Mr Douglas Greig**
Head of Enterprise & Industry, Scottish Executive

**Professor Denis Hall FRSE**
Deputy Principal (Research), Heriot-Watt University

**Professor Ian Halliday FRSE**
CEO, SUPA, School of Physics, University of Edinburgh

**Mr Andrew Harold**
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