

Science and Innovation Strategy for Scotland

Comments from The Robert Gordon University

General comments

Having been encouraged by the Next Steps report The Robert Gordon University is very supportive of a Science and Innovation Strategy for Scotland that will embed innovation at the heart of both the research base and industry.

We note that this is a very extensive consultation; we have confined our comments to the overall aspirations of each theme and where appropriate to the action points.

Theme 1 – Maintaining and Developing the Excellence of the Science Research Base

We support the vision as expressed but feel that there is a missed opportunity in setting the research aspiration into the context of the wider economic planning. While one could argue that this is expressed through Theme 3 we feel that issue of user based versus blue sky research should be addressed at a fundamental level and that Scotland should maintain a balanced portfolio of both.

In the action points we are pleased to note the support for Full Economic Cost but would ask that this be monitored for its impact on our competitiveness on the global stage.

While we support the initiative of research pooling, which we feel will bring the benefits from critical mass, it is important to recognise that the emerging themes of strategic importance are likely to arise from outwith these thematic focussed groups. As such, it is imperative that extensive pooling does not result in disenfranchising other researcher groups.

The scientific research base will have an important role with respect to environmental sustainability. The role of technology in addressing both the issues of our industrial environmental legacy and global climate change will be vital. Reducing the carbon footprint of both industry and the wider society will not be achievable without a strong science research base developing appropriate technology and will be a precursor for economic growth.

It could be argued that most of the significant improvements in the quality of life have resulted from scientific and technological developments, whether it was the development of antibiotics or the provision of clean drinking water and effective sewerage systems. In order to continue improving life expectancy and associated quality of life, strong investment in our science base is extremely important. In addition to secure economic growth, which will also improve the future quality of life investment in the Scottish science base is vital.

However it is also imperative to ensure a direct economic benefit for Scotland through effective exploitation of our scientific research within the country, rather than being exploited overseas. To this end the Scottish Enterprise Proof of Concept Scheme is

providing a vital role but more needs to be done to encourage local investment and growth opportunities.

Theme 2 – Enhancing International Connections and Capturing Overseas Investment.

We are disappointed that the focus is on a promotion strategy. We feel that this lacks vision and that the Executive has a more active role to play to enable international collaboration rather than merely promote the Science base.

In developing collaborations we should in the short term examine best practice in other countries and take a holistic view over all our science and technology needs from secondary school education to exploitation of R&D.

To enhance international collaboration we first need to attract, reward and retain world-class research staff, within a world-class infrastructure. This will require continued significant investment in our Universities and Research Centres.

The training of our graduate workforce will be vital for this theme and comments on this issue have been included in our response to Theme 5

Environmental sustainability is an issue that can only be achieved through collective international collaboration. In particular global climate change is a truly international problem and it is only through sharing best practice and technology that the challenges will be addressed. Furthermore most pollution problems cross international boundaries and hence require an international approach both in terms of **policing** and remediating. The main priorities for environmental sustainability again need to be addressed at a global level, for example should we be focusing on reducing carbon emissions or should we be concentrating on developing strategies and technologies that will mitigate against the challenges that climate change will present?

Theme 3 – Intensifying Knowledge Exchange between Academia and Business Theme 4 – Expanding Business Innovation

We do not feel that it is productive to consider these as separate themes as the arising actions from each should be closely co-ordinated

There is continuing evidence of University collaboration with industry, but the pull from Scottish companies remains low. We believe the long term aspirations should more fully consider the overall profile of Scottish industry in this regard.

We are disappointed that there are few new actions for Academia and Business collaboration in the short and medium term. We believe there is a missed opportunity to lobby for the RAE (or its replacement) to better acknowledge and reward user focussed research and for initiatives which underpin long term relationships between industry and academia as opposed to individual projects. (e.g. secondments both in and out of academia, industry input into research assessment etc.)

The culture of grant dependency to support innovation needs to be further challenged and while the ITI's have a role to play, it notable that the Executive no longer see their role in encouraging business academic collaboration.

We also believe that the Executive has a role to play in lobbying the EU to increase our influence and strengthen our ability both to collaborate and trade.

Theme 5 – Modernising Science Education and Promoting Science Careers

This is a crucial element for the future success of the Scottish economy. If one looks to the example set by Ireland there was a significant investment in Science Education during the late 1980s and early 1990s, which in turn supported the significant growth of the Irish Economy. In particular the investment in the regional Institutes of Technology that specialised in Science, Engineering and Business provided the training for a highly skilled workforce. This workforce was a major influence on the decisions of international high tech industries wishing to establish manufacturing and development facilities in the Irish Republic, in particular in the Pharmaceutical and the Electronics industries. This trained workforce is crucial for the long term prospects of the Scottish economy otherwise both international and national investors will have to seek alternative countries for their business.

Although Scotland has some excellent training facilities for Science and Technology Education in the past departments who provided professional training, in the newer Universities in particular, have been forced to close due to in these fields. As a result there are fewer teachers with the science training available to inspire the next generation to follow these subjects as a career. The way to address this in the short term is difficult; however encouraging more public engagement with science is one approach that must be encouraged. This is one way where school children may find appropriate role models in science and engineering. This is a collective responsibility of Government, Universities and Industry as well as the schools themselves.

Even existing industry has problems in recruiting staff with science end technology training. For example there is a serious skills shortage, particularly engineers, in the energy industry, which is a significant contributor to the Scottish economy. Similar skills shortages are now being experienced by the biotech industry, a sector which promises great prospects for the Scottish economy. For long term sustainability of industry these skills gaps must be closed.

The DTI in 2004 published a “gap analysis” report for the renewable industries. This revealed that in April 2004, there were in excess of 8,000 people employed directly in the renewable energy industry and that by 2010, this would rise to beyond 30,000. In 2003, the Scottish Executive established a formal advisory group on renewable energy, which has been charged with guiding policy over the next fifteen years. This group FREDS (Forum for Renewable Energy Development in Scotland) comprises the Chief executives of, Scottish Power, Scottish and Southern, Scottish Enterprise and Highlands and Islands Enterprise. The membership also includes the convenor of the Scottish Trades Union Congress, the chief executives of three renewable energy development businesses and one academic. One of the first recommendations of FREDS was for the Executive to make marine renewable energy a priority and the

recently published FREDS (Marine) report from the Scottish Executive suggested that a successful marine renewable industry could employ 35,000 in Scotland alone.

Both reports indicated, however, that there are major mismatches between skills in the market place, industry capability, graduate capabilities and the requirements of a developing industry. Again long term economic sustainability training of a workforce with appropriate skills in Science and technology will be vital but it will be extremely important to ensure that the correct skills are being addressed.

Theme 6 – Increasing Public Engagement with Science

This will be an important activity not only to improve the public understanding of science but to also increase the number of school children wishing to pursue a career in science and technology.

We feel that there has been a missed opportunity for the Executive to collaborate with existing initiatives such as the British Association for the Advancement of Science and other professional bodies.

We note that while there is some mention of the four Scottish Science Centres and the role that they may be able to play neither is their mention of increased investment or free entry as is currently common with museums. It seems a pity that it does not cost the public to look at our illustrious past; however we charge them when they want to look at the future.

The role of the media will also be important in engaging the public with science. It is interesting to note that in the areas of science which have displayed a growth in numbers, such as forensic science, many applicants have found role models in television drama series such as “CSI” or “Silent Witness”. As communication is the main job of the media, we should turn to them for leadership in best practice.