

Foreign & Commonwealth Office

Science & Innovation Annual Report 2006-2007



Science & Innovation Network

Foreword By David Miliband Foreign Secretary





Foreign policy is not just about projecting our own values outwards, using our influence as best we can to shape the world around us. Increasingly, and just as importantly, it is about identifying where we can gain from the expertise and knowledge of others. So the task of the FCO is both to take the best of Britain to the world and to bring the

best of the world back here too. Only countries that are open in that way to new ideas and new ways of approaching problems can hope to succeed in the 21st Century.

Nowhere is that more important than in the field of scientific endeavour. The great technological advances of the past 20 years have brought immense benefits to the world. But they have also created new and acute challenges, many of which will only be solved through new scientific breakthroughs. The Science and Innovation Network provides the crucial two-way global linkage that we need.

The UK has always, justifiably, had a reputation for scientific excellence. We can and must be willing to lend our expertise to the global response to some of those global challenges. The Science and Innovation Network helps to bring our own scientific community into contact with those working on the same problems in other countries. This report has details, for example, of how British teams working on the Earth Simulator in Yokohama have accelerated global understanding of the impacts of climate change by two to three years, of how others are doing vital work on plotting the thinning of the West Antarctic ice sheets and of how our scientists are working with Governor Schwarzenegger as he sets about cutting Californian carbon emissions. Or you can also read in these pages about how our scientists are helping to tackle global pandemic disease – working with the Chinese on avian flu and public health management.

At the same time the network is also performing that second vital function, using its contacts around the world to keep up with global scientific developments: building relationships, finding new sources of funding, monitoring new thinking and new findings. In so doing, the network helps to strengthen our own scientific base back here in the UK. Imperial college has secured over £8 million of Japanese funding for collaboration on human membrane receptors, alongside the Indian government we have awarded 29 grants of £100 000 or more to British-Indian joint research and development projects, and an ongoing programme on security technology in the United States has led to 11 new commercial contracts.

The Science and Innovation Network is growing – this year we strengthened the offices in both India and China, the growing scientific superpowers. The network has become a vital tool for the UK to meet its international strategic objectives – and as such it is valued not just by the FCO itself but across government. I commend the work of the network and I commend this report.

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*The United Kingdom does not recognise Taiwan, nor have diplomatic relations with it. British interests are handled by the British Trade and Cultural Office.





The Science and Innovation Network (SIN)

Science & Innovation Network

Advanced economies like the UK will only retain their economic competitiveness in today's rapidly globalising world by being at the forefront of the science and technologies that will create the new markets and jobs of tomorrow. We will increasingly depend on international partnerships and collaborations to sustain these strengths as more and more countries acquire the capacity for leading edge R&D.

Responding to the challenges of globalisation – including through science and innovation - is the fifth of the Government's 10 International Strategic Priorities.



THE GOVERNMENT'S 10 INTERNATIONAL STRATEGIC PRIORITIES

- 1 Making the world safer from global terrorism and weapons of mass destruction
- 2 Reducing the harm to the UK from international crime, including drug trafficking, people smuggling and money laundering
- 3 Preventing and resolving conflict through a strong international system
- 4 Building an effective and globally competitive EU in a secure neighbourhood
- 5 Supporting the UK economy and business through an open and expanding global economy, science and innovation and secure energy supplies
- 6 Achieving climate security by promoting a faster transition to a sustainable, low carbon global economy
- 7 Promoting sustainable development and poverty reduction underpinned by human rights, democracy, good governance and protection of the environment
- 8 Managing migration and combating illegal immigration
- 9 Delivering high quality support for British nationals abroad, in normal times and in crises
- 10 Ensuring the security and good governance of the UK's Overseas Territories

Section 1 The Science and Innovation Network (SIN) Introduction

As part of meeting this challenge, the Government has set itself an ambitious target to raise the level of R&D expenditure across the economy from the 2004 level of 1.9% to 2.5% of GDP by around 2014. It has massively increased public funding for research and development over the past decade, and in the 2007 Budget announced further increases for the period 2008-2011. But to reach the target, we will need a similar increase in the level of business R&D. A significant proportion of that increase will have to come from overseas and multinational companies putting new R&D investment in the UK.

The UK is well placed to rise to this challenge. We have one of the most creative and productive scientific and research communities in the world. With just 1 per cent of the world's population, the UK receives over 12 per cent of all citations to published papers and publishes almost 13 per cent of papers with the highest impact. UK scientists claim around 10 per cent of internationally recognised scientific prizes every year. Knowledge transfer activity from universities has increased substantially, with spin-out formation, licensing income, and patent applications increasing four-fold since 1998. The quality of our skills base is cited by most R&D intensive companies as the major factor in deciding to put new R&D investment in the UK.

But the importance of science and innovation goes much wider than the economy. How effectively we respond to climate change, global terrorism, the pressure on natural resources and other challenges will depend crucially on our scientific community. Science and innovation has a direct contribution to make to most if not all of the International Strategic Priorities. These aims cannot be achieved by any one department or publicly funded body. The FCO works in close collaboration with the Office of Science and Innovation, UK Trade and Investment, British Council, the UK Research Councils, the Royal Society, DfID, Defra, and DoH, all of whom come together under the Global Science and Innovation Forum (GSIF). GSIF has a mandate from Government that the UK should:

- Be excellent in research
- Be excellent in innovation
- Use research and innovation to leverage global influence; and
- Use research and innovation to meet international development goals

GSIF published its strategy for international engagement in R&D in October 2006, and the FCO's Science and Innovation Network has a crucial role in delivering that strategy.

THE FCO'S SCIENCE AND INNOVATION NETWORK (SIN)

The Science and Innovation Network was established by the FCO in 2000 in response to the growing importance of science, technology and innovation for our future. There are dedicated staff in 39 missions in 24 countries and territories.

SIN is coordinated by the Science and Innovation Group in the Foreign and Commonwealth Office in London, in collaboration with the Office of Science and Innovation and the Government's Chief Scientific Adviser, Sir David King. Based in UK embassies and consulates abroad, the overseas Network works closely with other colleagues including British Council and UK Trade and Investment.

Section 1 The Science and Innovation Network (SIN) Introduction

WHAT DOES SIN DO?

The Science and Innovation Network has four objectives:

Scientific Collaboration - facilitating scientific collaboration between UK universities and research laboratories and the world's best public and private-sector counterparts abroad, and working to increase access to foreign funding for UK researchers.

Innovation - strengthening the UK's innovation capacity through attracting R&D intensive international investment, helping UK companies to access and benchmark overseas technologies, and facilitating R&D partnerships and technology transfer.

Influence – using science and innovation to influence Governments and other overseas players across the range of the UK's international strategic priorities (e.g. climate change, energy security, poverty, infectious diseases, counter-terrorism).

Policy-making – helping UK and overseas policy-makers develop best practice in science and innovation policy, and developing international frameworks in breakthrough technologies such as stem cell research.

PRIORITISATION

The field of science and innovation is vast. To choose what we do SIN uses a mix of top down and bottom up:

TOP-DOWN: SIN works to support the UK Government's international strategic priorities, particularly those around globalisation, climate change and security. SIN therefore works closely with the Global Science and Innovation Forum and bilaterally with GSIF members, universities and industry.

BOTTOM-UP: Within this broad framework, SIN is responsible for proactively spotting opportunities to deliver for our customer base, drawing on particular strengths in host countries. SIN's local country-based expertise is the core of the value we add to the UK's overall Science and Innovation Strategy. SIN is regularly evaluated to ensure maximum impact.



Streptomyces coelicolor John Innes Centre Biotechnology and Biological Sciences Research Council (BBSRC)



Science & Innovatior Network

The Science and Innovation teams across the world have brought together many research partnerships and helped scores of companies in areas as diverse as astronomy, polar science, information and communications technology, space science and pandemic flu. Some initiatives are specific to one country, but the network has also achieved major outcomes across several countries in some key priority areas – stem cells, climate change, renewable energy, nanotechnology, and engaging with emerging economies.

STEM CELL RESEARCH

In late 2006 the Australian Federal Government overturned legislation preventing therapeutic cloning. The changes bring Australian laws into line with those in the UK and were the result of a private member's bill. The Science and Innovation (S&I) Officer provided information on UK stem cell research and legislation to a range of government contacts during the drafting of the bill. She also arranged a visit for the author of one of the bills to visit the UK Stem Cell Bank. The draft bill included a recommendation that Australia establish a similar bank.

The S&I team in the US worked hard to inform and influence Federal policies on human embryonic stem cell research. They encouraged a delegation of 13 people including 3 members of Congress to visit the UK in May 2006 for discussions with the UK Government and scientific communities. The delegation looked at the careful balance between the UK's regulatory and research framework. The visit helped to create strong links between UK and US legislators and resulted in the UK being cited as a model for stem cell regulation during the Congressional floor debates in the autumn.



In Boston the S&I team continued to work closely with UK and US stem cell centres of excellence to promote UK science and innovation objectives. Building on the already close links between the Harvard Stem Cell Institute and the UK Stem Cell Bank led to the deposition of 15 additional stem cell lines in the UK Bank. The visit of Glyn Stacey, Director of the UK Stem Cell Bank to Yale and Harvard also helped to expand the scope of possible future collaborations. On the academic side, two workshops between US and UK faculties resulted in an agreement to intensify collaborative work between Harvard and the UK in the area of stem cells for drug screenings.

In San Francisco the team facilitated regular interactions between the California Institute for Regenerative Medicine (CIRM), a \$3 billion stem cell funding body, the UK Human Fertilisation and Embryology Authority (HFEA) and the Research Councils. As a result the UK model heavily influenced CIRM's policies and regulations on stem cell research and CIRM agreed to use the UK banking standard as the measure for their own work. This opens up the potential for future collaboration and deposit of stem cell lines into the UK Stem Cell Bank.

The S&I teams in Sweden and Denmark, in partnership with UK Trade and Investment (UKTI), organised a successful stem cell mission involving researchers and companies from Sweden, Denmark and Switzerland. The group visited Edinburgh, London and Cambridge. At least seven participants have indicated they are already following up potential new partnerships with a variety of their UK contacts.

In March the S&I team in the Russian Federation and the British Council science team jointly organised a UK-Russian workshop on "Stem cells: policy, research, and innovations". This event triggered tremendous interest among the Russian stem cell community and the senior Russian policymakers, who took an active part in the event, are keen to make use of UK practices and regulatory norms in developing Russian legislation. As a result the Scottish Stem Cell Network is planning a working visit to Russia to advance its contacts with Russian partners.

In the Netherlands the S&I Officer ran a programme on regenerative medicine which led to several initiatives. One was the establishment of a UK/Netherlands consortium for the application of stem cell technology to create heart valves, which is currently seeking funding from the EU via Framework Programme 7 (FP7). It also led to UK/Netherlands/China dialogue on regenerative medicine and agreement to support a joint workshop on biomaterials in London in September 2007, which will also focus on identifying possible projects for funding through FP7.

CLIMATE CHANGE

The UK is seen as leading the world debate on climate change. S&I teams across the world were instrumental in helping to pursue UK policy objectives using the publication of the report by Sir Nicholas Stern on the economics of climate change which was published in October 2006.

Climate change has moved up the political agenda in Australia in the past 12 months. The State and Federal Governments have substantially increased spending in R&D – particularly in clean coal – and an emissions trading scheme is being considered. Australian research into clean coal, solar and geothermal power, as well as the establishment of several climate change research centres demonstrates the increased interest in and spend on research, opening up opportunities for collaboration with the UK. Collaboration has already occurred between the Queensland Government and the Hadley Centre and the Walker Institute for Climate System Research.





The UK-Japan Climate Collaboration based at the Earth Simulator supercomputer in Yokohama has continued to play a key role in advancing climate modelling capability and our understanding of the impacts of climate change. Outputs contributed to International Panel on Climate Change (IPCC) assessments and have ensured that the UK continues to be recognised as the leading proponent of action on climate change, backed by credible scientific evidence. Scientists estimate that access to additional processing time on the Earth Simulator was worth £1.5m and that as a result the science is 2-3 years ahead of where it would otherwise have been. Willis Re (a major UK insurance company) has included the Earth Simulator in its newly established network of UK and Japanese climate scientists. In Europe the S&I teams in Switzerland and Denmark brought together leading UK, Swiss, Danish and French climatologists, oceanographers, glaciologists and earth scientists. The aim was to assemble a UK-led consortium to bid for an EU FP7 research call on the stability of the North Atlantic Thermohaline Circulation, worth 10 million euros over four years. The consortium is agreed and has since been joined by Russian, Italian and German research groups.

Senior representatives from Roshydromet and the Russian Academy of Sciences undertook a sponsored visit to the UK in October. This successful visit included a day-long workshop at the Hadley Centre, which helped define areas for future co-operation between the UK and Russia on climate change science and impacts. This will be taken forward this year.

In Boston, as a result of the high level of interest in the Northeast in tackling climate change, the Consulate actively supported Regional Greenhouse Gas Initiative (RGGI) implementation in the participating states. In March 2007 UK parliamentarians visited the State of Maine to testify before the Standing Committees on Natural Resources and Utilities and Energy (holding a joint hearing for the first time) on lessons learned from the Emissions Trading Scheme and the economic and business impact of UK action. This followed the S&I team's wider promotion of the Stern Review and support for a visit to Yale by Sir Nicholas Stern in February 2007. Following two years of work by the Houston S&I team, the City of Houston joined the C40 Climate Group and the InternationI Council of Local Environment Initiatives (ICLEI) Climate Change Initiative and stepped up its own environmental work. Working closely with the S&I team, the city also plans to

establish a public/private "Houston Climate Change Partnership" based on the London model. Houston S&I also worked with the British Antarctic Survey (BAS) and the University of Texas Geosciences School to bring together more than 20 of the world's leading polar experts to reach scientific consensus on the thinning of the West Antarctic Ice Sheets and their contribution to sea-level rise. Their consensus statement was picked up by over 65 domestic and international media outlets.

In July, the San Francisco S&I team facilitated the launch of UK-California collaboration on climate change and clean energy by the Prime Minister and Governor Schwarzenegger, drawing attention to California's leadership on climate change. The Prime Minister and Governor Schwarzenegger also engaged senior business leaders at an event hosted by Lord Browne, spotlighting the business case for action. The landmark legislation enacted by California later in the year (California Global Warming Solutions Act 2006: AB32) placed California firmly at the forefront of international action on climate change. The S&I team has continued to lead the programme of follow up, best practice exchanges and visits, co-ordinating inputs from a number of Whitehall Departments, and

supporting the new global carbon markets coordinator appointed by Defra to assist California.

RENEWABLE ENERGY

The S&I team in China secured agreement for a major programme of UK/China energy research collaboration. They brought the DTI, the Engineering and Physical Sciences Research Council (EPSRC) and the Scottish Executive together to form a UK consortium capable of funding a wide range of energy research with Chinese partners. The EPSRC will focus on hydrogen, renewables and fuel cells and the DTI on coal and fossil fuels. The Scottish Executive will fund additional projects on renewable energy. Total UK funding for the programme is likely to exceed £4 million, with the main Chinese partner being the Ministry of Science and Technology.

The Embassy in Japan focused particularly on technologies relating to energy and sustainability. Reports on the Japanese fuel cell technology roadmap led to opportunities to work with the Materials, Low Carbon and Fuel Cell Knowledge Transfer Networks (KTNs) in the UK and succeeded in significantly raising awareness of developing UK capabilities. A number of Japanese companies have now registered as members of the Fuel Cells KTN. As a result of a researcher exchange organised by the Japan S&I team on



"Sustainability and the Built Environment" in 2004/05, Imperial College Business School and Tokyo Institute of Technology explored the possibility of working together on sustainability related innovation management and entrepreneurship. They established a joint programme focusing on innovation

management and health management, backed by Laing O'Rourke. The agreement was signed in Tokyo in November 2006 by leading researchers in both institutes.

The Los Angeles S&I team supported an outward mission run by the DTI. Nine UK companies in the sustainable energy sector were introduced to Southern California Public Power Authority and SpectroLab Inc. (a Boeing company) and attended PowerGen, a Renewable Energy Conference in Las Vegas that attracts over 150 companies annually. The UK companies that participated at PowerGen gained potential collaborative partners and insights into the global market and generated numerous sales leads. The S&I team also helped the UKTI team to identify four US renewable energy companies that have expressed interest in expanding into the UK.



NANOTECHNOLOGY

The S&I team in Germany arranged for members of the UK's Council for Science & Technology (CST) Nanotechnology Subgroup to visit Karlsruhe, Ludwigshafen and Berlin in November 2006 to discuss regulatory issues and research on the risk from nanoparticles. The visit was part of CST's project to monitor HMG's implementation of the recommendations in the 2004 nanotechnologies report. The programme included meetings with a major chemicals company, a range of government departments and agencies and leading scientists in the field. Discussions indicated great potential for international collaboration in the area of risk-related research, especially on metrology, standardisation and the characterisation of engineered nanoparticles.

The S&I team in Paris organised a seminar and networking event on 'Nanomedicine Collaboration – countdown to FP7', aimed at promoting enhanced UK/French collaboration and participation in FP7, with key support from the UK Micro and NanoTechnology (MNT) Network, the DTI, and the French Atomic Energy Commission (CEA). The event showcased British nanomedicine research expertise and capabilities and provided opportunities to engage with key French partners and opinion leaders. 52 UK and French scientists participated and the majority of UK participants said they intended to submit a proposal to FP7 with French partners.

As a result of a visit to Israel for a nanobiotechnology workshop in December 2004 organised by the S&I officer in Israel and funded by the UK and Israeli Governments, collaborations ensued between one of the UK participants and an Israeli colleague. In 2006 they became part of an EU funded (2 million euro) consortium on nanotechnology.

In Sweden at least three business collaborations are under consideration as a result of the SIN partnership with UKTI to take a small group of Swedish nanotech/nanoscience researchers to the UK NanoForum in October 2006.

Taiwan is a priority market in nanotechnology and the S&I team there worked with UKTI to send a Taiwanese mission to UK NanoForum in Oct 2006. Working closely with the S&I team in Japan, non-disclosure agreements were signed between IPWorks, a Taiwanese technology trading company, and several UK nanotechnology companies to find licensing deals for the UK firms.

The Los Angeles S&I team worked with the SET Squared partnership (the Universities of Bath, Bristol, Southampton and Surrey) to win a £1.5m award from the then Office of Science and Technology (OST). The collaboration facilitated by Global CONNECT - a San Diego regional development agency - continues to build lasting relationships between SET Squared and the University of California Irvine (UCI) and University of California San Diego (UCSD) in the disciplines of biopharma, communications, nano material and clean technology. On the applied research side of the collaboration, over 30 academics were involved in bid development collaborations, and a joint environmental workshop will be held in California later in 2007. On the enterprise side, over 30 UK companies have been assessed to date. Four companies have been listed on the UK's Alternative Investment Market with a combined valuation of over \$256 million. This helped raise more than \$53 million in follow-on funding for spin-outs and technology start-ups.



ENGAGING WITH EMERGING ECONOMIES

January 2007 saw the launch of Demos' "Atlas of Ideas" report. This year and a half long study highlighted how emerging economies such as India and China are going to play a major role in global innovation in the near future. S&I teams in China, India and South Korea worked closely with Demos to provide access to key people and institutions. The launch event attracted senior S&I stakeholders and officials from all three countries and the UK, and interest from many more countries. The consensus was that the new geography of science represents a challenging opportunity, in which the UK will have to fully engage to maximise the benefits.

In India the S&I team ran a Science Public Diplomacy Initiative to raise awareness of UK science. This was a 6 episode TV series called 'Future Living 2020', focusing on issues highlighting the impact of British S&I on our futures. Topics featured health, environment, lifestyles, ICT and creativity. The programme highlighted cutting edge research undertaken by companies, institutions and individuals including McLaren Mercedes, CSR, Lionhead Studios, BT, Newcastle and Oxford Universities, and Baroness Greenfield. Over 50,000 graduates, government officials, senior scientists and high-tech businessmen were made aware of the series, over 7,000 media packs handed out and the estimated reach of the TV series itself was 34 million households.

The UK-India Education and Research Initiative (UKIERI), announced by Tony Blair in 2005, started in April 2006. This £16m initiative, which is a unique collaboration between several government departments, Devolved Administrations, Regional Development Agencies and industry, announced 6 awards of £500,000 and 23 of £100,000 to excellent and sustainable R&D collaborators. The S&I team were instrumental in securing matching funding of over £6m from the Indian government to extend the reach and duration of the initiative. The S&I team in India helped to facilitate increased collaboration in diverse areas such as next generation networking, earth observation, optical fibres, health research, biotechnology, social sciences and the commercialisation of science. In particular the optical fibres collaborators were successful in winning a major award from the UKIERI.



In the past year the Science and Innovation Network in China has worked towards establishing the UK as China's science partner of choice in the EU by:

1. Winning Chinese and UK support for a further phase of the UK/China Partners in Science initiative. Around £1 million-worth of collaboration projects and activities are under way. Outcomes to date include:

- a UK/China virtual space laboratory (UK partner: Rutherford Appleton Laboratory)
- UK/China clinical trial research on an avian flu vaccine (Medical Research Council)
- a UK/China network on biomaterials research collaboration (Biotechnology and Biological Sciences Research Council)
- a UK/China project to better calibrate models of past climate change patterns based on fossilised plants (British Geological Society)
- a UK/China project to study China's future needs in flooding defences (Office of Science and Innovation, National Environment Research Council, World Summit on Sustainable Development)

2. Persuading the Chinese government to co-fund a groundbreaking programme of UK/China proof-ofconcept R&D projects. The programme, worth around £8 million, will launch in autumn 2007 and enable many UK and Chinese universities and institutes to take forward joint research of commercial potential. The UK end is supported by £5 million from the Higher Education Innovation Fund and involves a consortium of UK universities led by Queen



Mary, University of London. It is supported in China by the Ministry of Science and Technology.

3. Negotiating support for a proposal to open an overseas office of the UK Research Councils in China. The team secured an agreement in principle from the Chinese government to allow RCUK to open an office/seminar centre in China in 2007. The office will promote basic and applied research collaboration and enable the Research Councils to build on the links established by the first phase of UK/China Partners in Science.

4. Securing Chinese government agreement for a UK/China ministerial Dialogue on healthcare. The S&I team created a new opportunity for the UK and its healthcare agencies, institutions and companies to position themselves as priority partners for China. The first meeting of the UK/China Dialogue on Health took place in 2007 with a focus on four themes:

- Public health emergency response mechanisms
- Prevention and treatment of infectious disease
- Hospital management
- Community health systems

The Dialogue will be supported on the UK side by the Department of Health, Department for International Development (DfID), the FCO and UKTI and will include a programme of collaboration activities involving healthcare companies called Partners in Health Innovation.

5. Transforming perceptions of the UK as a science partner. The team commissioned a bibliometrics study, which established that scientists in the UK publish more joint papers with China than those of any other EU nation. By disseminating this message, they significantly changed the way Chinese officials and policymakers think of the UK as a science partner.

Following the State Visit of President Lula of Brazil to the UK in March 2006, Sir David King, the UK Government's Chief Scientific Adviser, and Luis Fernandes, Acting Minister for Science and Technology in Brazil, launched the UK-Brazil Year of Science and Innovation in March 2007 in Brasilia and Sao Paulo. The aim of the Year is to bring research collaboration between the two countries to a new level. It has already produced a number of tangible outcomes:

- A Memorandum of Understanding between Rothamsted Research and Empresa Brasilera de Pesquisa Agropecuaria (Embrapa)
- A Memorandum of Understanding between the Science and Technology Facilities Council (STFC) and the Instituto Nacional de Pesquisas Espaciais (INPE)

A number of additional agreements between key Brazilian and UK institutions are also being developed, which will result in joint research activities, including on climate change and synchrotron technology.



OTHER AREAS

In Canada, the GOF funded North American postdoc short visits scheme, established and run by the S&I team in Ottowa, completed it's second final pilot round. As a result of the high calibre researchers attracted to the UK by the scheme, the Royal Society has provided funding for further competition.

The S&I Officer in Prague organised an Intellectual Property Rights (IPR) conference in November 2006, where a new Czech funding programme to support patents was introduced in the EU Structural Funds 2007-2013 period. The conference stimulated the development of open and coherent IP management policies within the Czech Republic, consistent with UK best practice. Patenting was also implemented as one of the key evaluation parameters of research results by the Ministry of Education. And Universities have started including more business training in science and engineering courses with topics covering patenting law, application processes and project management.

As a result of the presentation of the new Diamond synchrotron held in Rome in March 2006, organised by the Italian S&I team, UK and Italian scientists started new collaborations. Diamond is now working with Sincrotrone Trieste on insertion devices, specific components for the machine, and collaborations are also progressing in Infrared Microspectroscopy, particularly in imaging for biomedical applications. Other collaborations are planned in material science, solid state physics and synchrotron radiation IR techniques. Scientists are now exploring the possibility of applying for EU funds under FP7 for a project which will include a technical design for a proposed new infrared beamline.

The S&I team in Warsaw has been instrumental in the establishment of an academic technology incubator in Poland called Cambridge Python. This draws heavily on the Cambridge Silicon Fen model, and is led by a Pole who completed his post-doctoral research in Cambridge. Providing some funding for training the initial core team and securing Polish Ministerial backing, the S&I team helped the project through to a successful launch in March 2007. Cambridge University remains closely involved, and there are significant opportunities in both Poland and the UK for developing new technologies.

Section 3 **Country Profiles**





Australia

Country profile

Population 20.8 million

GDP* (£ Billion) 377

Total National Research expenditure (£) 6.6 million

Public/Private R&D spend ratio (in form Public:Private) 43:57

Previous year growth in GDP (%) 2.7

Key S&I Developments

Climate change has been raised up the political agenda in Australia in the past 12 months. The State and Federal Governments have substantially increased spending in R&D - particularly in clean coal - and an emissions trading scheme is being considered. Australian research into clean coal, solar and geothermal power, as well as the establishment of several climate change research centres demonstrates the increased interest in and spend on research, opening up opportunites for collaboration with the UK. Collaboration has already occurred between the Queensland Government and the Hadley Centre and the Walker Institute for Climate System Research.

Looking back, looking forward

Climate change will continue to be the focus of much of the work done in Australia. Having suffered the worst drought in 100 years, Australia is well placed to study the effects of climate change and their research institutions are leaders in this area. Increased collaboration on climate change at both a state and federal level is planned, including sharing best practice on policy, business practice and research.

Stem cell research will be another focus, as the International Society for Stem Cell Research will hold their annual conference in Australia - the first time it has been held outside North America. Working with colleagues from our other posts we will showcase the excellent research being done in the UK.



Key S&I Developments

President Lula recently announced that Brazil plans to invest 10 billion reais (2.5 billion GBP) over the next 10 years into biotechnology research involving renewable energy, agriculture and rain forest pharmaceuticals. "Brazil has 20 percent of the world's biodiversity and immense forests. The goal is to activate that potential," Lula said at an event to sign a decree outlining the policy.

More than half Brazil's territory is covered by the Amazon rain forest. Governments have long talked of tapping its potential as a source of pharmaceutical discoveries, but bureaucracy and lack of investment have slowed progress.

The funding should come from public and private investment. The government will contribute 60 percent, including funds from the Brazilian Development Bank (BNDES), and the private sector will provide the rest.

Lula said he would promote research into rain forest plants, while continuing to fight deforestation. He cited Brazil's ethanol programme as proof the country can profit from biotechnology. The aim was for Brazil to become a global leader in biotechnology in the next 10 to 15 years. Brazil is a powerhouse agriculture exporter that became a global biofuels leader by investing in sugar cane ethanol over the last three decades. The government also recently cleared the way for genetically modified crops.

Looking back, looking forward

With the launch of the UK-Brazil Year of Science and Innovation, research collaboration between the two countries is expected to significantly increase. Two months after the launch, four agreements have been signed between relevant UK and Brazilian institutions, and a number of others are being discussed.

Notable successes include the inclusion of the Amazon Biotechnology Laboratory in the Bioscience for Business Knowledge Transfer Network.

The Year will witness the organisation of important research workshops, which will be organised around the themes of Human Life, Planet Earth, Reaching Beyond and Creativity.

For more information, see www.reinounidopelaciencia.com.br

Population 186 million

GDP* (£ Billion) 596

Total National Research expenditure (£) 1.3 billion (approx)

Public/Private R&D spend ratio (in form Public:Private) 55:45

> Previous year growth in GDP (%) 3.7

Canada

Country profile

Population 32.7 million

GDP* (£ Billion) 647

Total National Research expenditure (£) 14 billion \$28,357,000,000

Public/Private R&D spend ratio (in form Public:Private) Approx 1:1

Previous year growth in GDP (%)

\$14 billion: \$14.8 billion

2.7

*All economic data is taken from the IMF World Economic Outlook April 2007

Key S&I Developments

After initially focusing on other priorities, Canada's Conservative minority government has been placing increasing emphasis on science and innovation.

The Minister of Industry has prepared a new Science and Technology Strategy in collaboration with the Minister of Finance. The strategy, which was released on 17 May, will include a review of the value for money of the granting councils. To contribute to this strategy the government commissioned a report from the Council of Canadian Academies (www.scienceadvice.ca) on Canada's S&T strengths. As expected, the report highlighted natural resources, ICT, health sciences and environmental S&T.

The March 2007 budget included a number of science and innovation initiatives, including \$510 million new funding for the Canada Foundation for Innovation for infrastructure funding, \$350 million for Centres of Excellence in Commercialisation, and other funds to support research in health, energy, environment and ICT.

Increasingly, it is the Provinces that are taking the lead in setting the science and innovation agenda. In December 2006 the Quebec Provincial Government pledged to invest C\$1.2 billion in knowledge and technology transfer activities. Ontario's new Ministry of Research and Innovation, headed by the Premier, Dalton McGuinty, is investing \$400 million in innovation, and has seen impressive results. Other provinces, particularly British Columbia and oil-rich Alberta also have strong science and innovation policies.

Looking back, looking forward

International Polar Year (IPY) presents an opportunity to increase UK-Canada polar co-operation. As an Arctic country, Canada is heavily involved in IPY and in 2007-08 we will undertake a number of activities on Arctic science. In late 2007 we will partner with the Canadian Circumpolar Institute to host a bilateral workshop focused on increasing UK access to Canadian Arctic research infrastructure.

Looking back, the 2006 UK-Canada Nuclear Skills Workshop led to the creation of a bilateral working group which is facilitating student and researcher exchanges in nuclear engineering. Discussions on the possibility of joint teaching are ongoing.

Key S&I Developments

China's 2006 11th Five Year Plan sets out a strategic shift in China's growth model that puts science and innovation at the heart of driving future economic growth.

China will now focus on (i) enhancing its independent research capacity and (ii) building an innovative economy, including global networks.

China is also clear however about the need to build scientific development alongside a 'harmonious society'. In practice, this has led to greater focus on enhancing regional innovation capacity as well as developing policies to ensure efficient and effective running of its innovation system. Developments over the past year include

- The transfer of State research funded IPR from the State to research institutes
- Developments in research ethics e.g. use of human subjects
- A clamp down on academic fraud

Looking back, looking forward

In 2005 we helped to organise a mission by the Medical Research Council (MRC) to Chinese institutes to assess the scope for collaboration in avian flu and infectious disease research. Since then we have continued to build links, through visits and workshops, between the UK and Chinese infectious disease research communities. These are now bearing significant fruit. The MRC recently approved funding for UK scientists (led by Xu Xiaoning of the University of Oxford) to participate in a major clinical trial in China of an avian flu vaccine. The UK team's involvement will enable the trial to investigate more fully how the human immune system responds to the vaccine. In an additional project we are working with the MRC and Chinese partners to map the differences that currently exist in the way our two countries implement guidelines and regulations on biomedical research ethics.



Population 1.314 billion

GDP* (£ Billion) 1313

Total National Research expenditure (£) 19.2 billion (Gross Expenditure on R&D 2006)

Public/Private R&D spend ratio (in form Public:Private) 1:3

> Previous year growth in GDP (%) 10.7

Czech Republic

Country profile

Population 10.3 million

GDP* (£ Billion) 71

Total National Research expenditure (£) 1 billion

Public/Private R&D spend ratio (in form Public:Private) 41:59

Previous year growth in GDP (%) 6.1

*All economic data is taken from the IMF World Economic Outlook April 2007

Key S&I Developments

R&D spend in the Czech Republic increased by 20.3% in 2005 to around £1bn per year or 1.42% GDP, up from 1.26% in 2004. Currently 9.1 workers in 1000 are employed in R&D.

Roughly 60% of all investments made by US firms in the Czech Republic in 2006 went into R&D. Almost 80% of the 21 projects recorded by CzechInvest's California office are related to R&D. Roughly one third of these projects are from small Silicon Valley firms that develop software or semi-conductors.

Since January 2007, the Czech Republic offers three EU Structural Fund programmes specifically targeted at R&D, namely Science (S&Rfl), Innovation (OPBI) and Education (EfC), £4.6bn in total for 2007-2013. This presents opportunities for UK consultants, science parks and advisers.

The Czech Foreign Ministry plans to set up a Czech S&I Network similar to the FCO's Science & Innovation Network. The Czech Science Ambassador, Karel Zebrakovsky, has visited the FCO, OSI and other UK stakeholders and is keen to collaborate with the UK.

An International Clinical Research Centre is to be opened in Brno in partnership with the Mayo clinic (U.S.). £50m is invested into the world-class biomedical research and development facilities with emphasis on applied research, advanced diagnosis and treatment of cardiovascular diseases, and high quality education programmes.

Looking back, looking forward

The Global Opportunity Fund Project on Support of Business Innovation Centres in the Czech Republic was launched in 2004, helping to focus the attention of Czechs on applied science and innovation. Since that time, one of the two Czech project experts, Mr. Pavel Komarek, became the Deputy Minister of Education with responsibility for higher education, science and innovation. The UK model and the best practice gained during the GOF project are being implemented by the Ministry; the UK is seen as a partner of choice.

In 2007-8, we expect continued strong Czech support for Science, Technology and Innovation with EU R&D Structural Funds, and stronger international collaboration using Framework Programme 7 funding. Applied science, knowledge transfer and innovation are widely accepted at Czech Universities. The Czechs plan to join the European Southern Observatory in 2007. Our activities next year will be focused on commercialisation of new technologies and active Czech participation at UK NanoForum 2007.

Denmark

Country profile

Key S&I Developments

The Danish government is on track to inject an additional £1 Billion into Danish R&D during 2007-2010. The 2007 science budget is increased by £100 Million from the Globalisation Fund.

Following very successful tests, a small company, Biogasol, has been established at the Technical University of Denmark to refine the production of second generation biofuel. The company has been so successful that a full scale production facility will be built on the island of Bornholm before 2009 at a cost of £25 million. The output will be 10 million litres of bioethanol and ten thousand tons of wood pellets for heating per year.

A coal-fired power station in Esbjerg has been fitted with a pilot system for carbon capture under the EU-project CASTOR. The system operates with 90% efficiency scrubbing 1 ton of 99.5% pure CO2 per hour from the chimney gases.

Looking back, looking forward

Last year's focus on stem cell research in the UK, and more specifically, Scotland's success with their stem cell strategy, has made waves in the Danish scientific community. Following the stem cell inward mission to London, Edinburgh and Cambridge, a Danish science journalist wrote a two page article comparing the poor conditions for Danish scientists with the conditions in England and Scotland.

As a result the Danish government called a hearing in early May to listen to evidence from Danish and Scottish experts. Denmark and Scotland are comparable in size and demographics and the Danish stem cell network DASCDOC hopes to raise the awareness of the politicians and improve its funding situation.



Population 5.4 million

GDP* (£ Billion) 138

Total National Research expenditure (£) 3,500 million

Public/Private R&D spend ratio (in form Public:Private) 34:66

> Previous year growth in GDP (%) 3.3

France

Country profile

Population 61.5 million

GDP* (£ Billion) 1114

Total National Research expenditure (£) R&D spend for 2005 36.396 Billion Euro, 2.13% GDP 2005, source Eurostat

Public/Private R&D spend ratio (in form Public:Private) 48.3:51.7

Previous year growth in GDP (%) 2

*All economic data is taken from the IMF World Economic Outlook April 2007

Key S&I Developments

The French government increased annual research and higher education spending by a billion Euro in each of 2006 and 2007. They are committed to achieving the Lisbon R&D target of 3% GDP, but whilst public R&D is already strong at around 1%, the level of private spending remains a concern.

April 2006 saw the introduction of the research & innovation law and its key elements have been implemented through the year. Key among these were the installation of a Presidential science & technology council aimed at strengthening strategic research advice; implementation of measures to reduce the fragmentation of French research, by encouraging research networks and regional clusters, and enhancing links with industry; and the launch in March 2007 of a new research evaluation agency aimed at driving up quality through more systematic evaluation of all publicly funded research.

November saw the signature at the Palais de l'Elysée of the final accord for the International Thermonuclear Experimental Reactor project, with construction now underway in Cadarache. In December President Chirac formally inaugurated the new French synchrotron Soleil.

Presidential elections will be held over the coming months. Leading candidates have all spoken of the strategic importance of science and innovation and have

proposed substantial public research funding increases. Each has however a different take on what is needed to improve effectiveness of the research effort.

Looking back, looking forward

As predicted in last year's report, our Global Opportunities Fund grant has enabled us to significantly increase our wealth creation activity: the team in fact delivered 6 successful partnering events over the year covering spintronics, UK-FR synchrotron collaboration, anti-infectives, novel oncology therapies, nanomedicine and second generation biofuels. Looking forward we will work with key UK stakeholders including the Knowledge Transfer Networks to deliver at least 4 further events over the coming year. These will aim to build international technology partnerships involving the science base and industry and encourage further engagement in EU programmes, principally FP7. Priority areas for improving links and knowledge sharing will include Carbon Capture & Storage and Nuclear skills. We will also organise a series of high profile science lectures and debates thanks to the FCO Public Diplomacy Fund.

Germany Country profile

Key S&I Developments

Germany's cross-departmental High Tech Strategy (2006-2009) promotes research and innovation through events, action plans, cross-cutting measures and research programmes in 17 high-technology sectors. Action plans for Nanotechnology and Security Research already exist. Two billion Euros has been earmarked for Energy Research. An international R&D strategy is expected soon and a high tech strategy on Climate Security is due in October.

Three new advisory bodies - the Council for Innovation and Growth, the Advisory Group on Research and the Expert Commission on Research and Innovation – improve scientific advice to policymaking in research, innovation and technological competitiveness.

Germany's 2007 EU Presidency saw the launches of FP7 and the European Research Council. Germany's G8 Presidency priorities include climate change, energy efficiency, intellectual property rights and Africa.

Looking back, looking forward

"The Genetics Revolution" was the first of four international science policy conferences which S&I Berlin is cosupporting with FCO Global Opportunities Funding. Held at the Wellcome Trust's Sanger Centre in Cambridge, it attracted 25+ participants and a range of eminent speakers. These four conferences target the rising generation of leaders from the UK, Germany and elsewhere to discuss crucial challenges and opportunities arising from scientific and technological progress. The remaining conferences focus on climate change, population & health, and scientific creativity & innovation. They are organised by the 21st Century Trust and co-funded by the German Research Foundation and the Stifterverband, a research-funding charity set up by German industry.

The conference topics emerged from a launch conference held in April 2005 and were endorsed by the Prime Minister and the then German Chancellor. More information can be found at www.21stCenturyTrust.org

The S&I team in Munich secured Global Opportunities Fund resources for a twoyear UK-German Nanotechnology networking project (2006-2008). Three of the German companies (global players) which attended the UK NanoForum in London in October 2006, have established close contacts with UK companies and are considering further co-operation in nanomaterials in the automotive and photovoltaic sectors. Several potential collaborations are already in prospect after twelve UK companies attended a Saxony Industry Ministry workshop on nanotechnology for the automotive sector, in Leipzig in March 2007. Future activity is likely to include a visit by potential German users to the Diamond synchrotron light source in the UK.

Population 82.5 million

GDP* (£ Billion) 1447

Total National Research expenditure (£) 37.8 billion (2005) or 2.46% of GDP

Public/Private R&D spend ratio (in form Public:Private) 22.0 bn:33.2 bn

> Previous year growth in GDP (%) 2.7

India Country profile

Population (Billion) 1.1

GDP* (£ Billion) 442

Total National Research expenditure (£) 0.5% of GDP

Public/Private R&D spend ratio (in form Public:Private) 80:20

Previous year growth in GDP (%) 9.2

*All economic data is taken from the IMF World Economic Outlook April 2007

Key S&I Developments

The Indian government announced plans to expand the elite Indian Institutes of Technology (IITs) by three - in Andhra Pradesh, Bihar and Rajasthan, and a new high-end research institute, The Indian Institute of Environmental Technologies focused on green technologies for industry.

The Ministry of Earth Sciences was created by merging the Ministry of Ocean Development and the India Meteorological Department, this new entity will create a framework for understanding the complex interactions of the Earth System, namely ocean, atmosphere and earth.

This was a good year for the 50th anniversary of Indian space science, with the successful launch of multiple payloads, one of which was a capsule recovery experiment, paving the way for manned space flight. Chandrayaan-1, the country's first unmanned moon mission will be ready for launch in spring 2008. India Space Research Organisation (ISRO) revealed plans for an unmanned Mars mission. ISRO also launched a satellite for its first paying customer, the Italian Space Agency.

India joined the realms of global big science by joining the Human Frontier Science Program Organisation (HFSPO) and also the ITER project as a full partner.

Looking back, looking forward

Over the past year, the UK-India Education and Research Initiative (UKIERI) has generated huge interest and excitement from the UK and India's S&I communities, surpassing all expectations. The Initiative has moved from a unilaterally funded UK initiative to a bilateral one in which the Indian government is an integral and committed player. UKIERI has now become the benchmark, not only on how to create a sustainable partnership but an exemplar in HMG inter-departmental co-operation alongside regional and industry stakeholders.

India is significantly expanding its S&I base. A key challenge will be to extend already high standards of research at key institutions whilst creating new globally significant centres of excellence. A key objective of SIN will be to help bring the UK's extensive experience to bear on what seems an insurmountable task. Success will not only benefit India but will help to increase the ease with which UK and Indian scientists and researchers can collaborate.



Key S&I developments

Israel continues to lead in the national spend on R&D relative to its GDP -4.7% (2005). Israel has the largest number of start-ups outside the US, has more companies traded on NASDAQ than any European country and accounts for 1.28% of all scientific articles in the world (with less than 0.1% of the world population). In absolute terms, Israel also has the 2nd highest number of publications on stem cells.

In its 2006-7 yearly report, the World Economic Forum ranked Israel first for availability of scientists and engineers, second for venture capital availability, third for technological readiness, and seventh for innovation. The OECD ranked Israel 6th globally for number of patents per GDP and 8th for patents per capita ahead of the OECD average.

S&I developments include nanotechnology R&D to receive \$230 million funding over the next five years, in a model where universities and government match private donations; a \$110 million "Biotech Valley" industrial park to be set up by Government, academia, industry and the private sector in the north of Israel; Google, IBM & HP announcing plans to expand their R&D operations in Israel and Oracle and Agilent announcing plans to open new R&D centres in Israel.

Looking back, looking forward

Professor Stephen Hawking visited Israel and the Palestinian Territories for 8 days in December 2006. The highlights of the Israeli programme were a meeting with Prime Minister Olmert and three public lectures. The visit received vast media coverage - achieving the Embassy's goals of promoting UK scientific excellence and the UK as the international partner of choice in science and technology. It was also well received by the Israeli academic/scientific communities.



An Israeli delegation visited the UK in April to learn about the UK system of Stem Cell and Human Tissue Regulation. The delegation was headed by the Director General of the Israeli Ministry of Health and included legal advisors from the Ministry of Health and the Ministry of Justice. The delegation met representatives of the Human Fertilisation and Embryology Authority, Department of Health, Human Tissue Authority, National Institute for Biological Standards and Control, Biotechnology and Biological Sciences Research Council and others. Population: 6.93 million

GDP* (£ Billion) 70

Total National Research expenditure (£) 4.7% of the GDP

Public/Private R&D spend ratio (in form Public:Private) 20:80

> Previous year growth in GDP (%) 5.1

Population 58.7 million

GDP* (£ Billion) 925

Total National Research

expenditure (£) 8,891.5 Million Source OECD Science Technology and Industry Outlook 2006

Public/Private R&D spend

ratio (in form Public:Private) 43:50.8 Source OECD Science Technology and Industry Outlook 2006

Previous year growth in GDP (%) 1.9

*All economic data is taken from the IMF World Economic Outlook April 2007

Key S&I developments

The National Research Plan issued by the Ministry for University and Research in 2005 is in force until the end of 2007. The Plan identifies the following priority sectors: Production Systems; ICT; Agriculture and Food Technologies; Health; Cultural Heritage; Energy and Environment; Transport. Such priorities were established by analysing the major international technological and scientific trends and elements of specific relevance to the Italian system.

The Financial Bill 2007 set out measures specifically addressed to research: a tax exemption for investment in research and innovation for which 1bn Euro has been allocated over 2 years (2007-09); a new Fund for Investment in Scientific and Technological Research financed with 1.2bn Euro in 2007-09, and a plan for the employment of new researchers.

In April 2007 the National Assessment Agency for Research was officially opened: it will be a key element in the government's campaign to raise the international standing of its academic institutions providing an independent and serious evaluation of research and teaching. It is worth noting a positive trend in the number of international patent applications, which in 2006 grew by 16.1% compared to 2005, thus showing an increased tendency to protect research results in view of prospective commercial applications.

Looking back, looking forward

As a follow up to the positive results of the Emission Trading Seminar in 2004, in February 2007 another event was organised jointly between the S&I and UKTI teams. Some of the British companies have already received business enquiries from delegates. The event got extensive press coverage by news agencies, specialised and national press, thus reinforcing the UK leadership in this area.

Following the successful outcome of the Clean Coal Technologies workshop held last December in Rome, which reinforced the links between leading UK and Italian institutions in this field, the S&I team will organise a one-week school on CO₂ capture and storage, in collaboration with the Italian National Institute of Geophysics and Volcanology and the National Agency for New Technologies, Energy and Environment. Defra and the Italian Ministry for Economic Development will patronize the initiative. The school also aims at attracting researchers from China and India.

Key S&I developments

In March 2006 Japan finalised the third five year plan for science and technology. This set a target of 1% of GDP for government investment over the next five years - roughly equivalent to £125 bn. The S&T budget for 2007 reaffirmed the government's commitment to science and technology, and an enhanced role for the Council for Science and Technology Policy resulted in stronger prioritisation of S&T investment across government around key themes, such as energy, IT and healthcare. Business continues to invest heavily in R&D, with Toyota's research budget set to exceed one trillion yen.

The five year plan also marked a shift in attention from infrastructure and equipment to the development of human resources and skills. The appointment of Professor Kurokawa to the new post of science advisor reinforced this move, with instructions to deliver a report, dubbed "Innovation25", that would set out a framework for science and innovation policy over the next 20 years. Education reform and environmental drivers of growth are expected to be key themes.

Japan has continued its focus on internationalisation of the science base and improved links with business. East Asia is a top priority. Japan is keen to contribute to global social and economic challenges – climate security, energy supply and healthcare. The UK and Japan can achieve much in partnership, and there is increasing opportunity to do more.

Looking back, looking forward

Climate change, energy and sustainability has been a consistent priority for UK-Japan collaboration and will continue to be so. The UK-Japan Climate Collaboration is now entering its final year and results emerging over the last year have highlighted the need for urgent action on climate change. The ability to model the frequency of extreme weather events over a 20-30 year timescale is unique and is of particular interest to insurance companies. Next September, a summer school in the UK will provide an opportunity to develop the next generation of British and Japanese climate scientists - not just in the details of climate modelling, but in the interpretation and assessment of the likely impact. The collaboration will help bring UK climate expertise to support Japanese objectives for their G8 Presidency in 2008.

The additional impetus given to UK-Japan science and technology collaboration by the Prime Ministerial joint statement in January 2007 promises well for increased research co-operation, focusing particularly on energy R&D and life sciences. 2008 represents a major milestone in UK-Japan bilateral relations and the Embassy will be promoting UK-Japan science and innovation through a series of high profile events celebrating creative and contemporary collaboration between the UK and Japan. Population 128 million

GDP* (£ Billion) 2182

Total National Research expenditure (£) 80 billion (17.9 trillion yen) in 2006

Public/Private R&D spend ratio (in form Public:Private) 19:81

> Previous year growth in GDP (%) 2.2

Korea, Republic of (South Korea)

Country profile

Population 47 million

GDP* (£ Billion) 444

Total National Research expenditure (£) 13.2 billion (2005)

Public/Private R&D spend ratio (in form Public:Private) 24.3:75.7

Previous year growth in GDP (%) 5

Key S&I developments

Korea continues to focus on science and innovation as a key driver for its future success. Investment in science and innovation, both by the government and the private sector, continues to grow. The Government and industry are both increasingly looking toward international collaboration as a means of making progress. Some highlights from Korea over the last year: Samsung developed a new high-speed DRAM memory chip; Korea's largest wind farm began generating electricity (244,000 MWs per annum); Korean steelmaker POSCO completed its nextgeneration eco-friendly steel plant that reduces emissions of sulphur and nitrogen oxides by 90%; Korea launched its newest multi-purpose satellite, Arirang 2; the Government confirmed its commitment to the ITER project: Samsung and LG produced ever larger plasma and LCD television sets; a science and technology co-operation agreement was signed with the EU; Rolls Royce entered into a partnership to research and develop next-generation heatexchangers.

Looking back, looking forward

The UK-Korea Science, Technology & Innovation Partnership was renewed on 30 November 2006 for a further two years with commitment from both governments to continue funding bilateral initiatives.

Focus areas for 2007/08 include: hydrogen storage; location and tracking systems; nanostructures and materials; space science & technologies; women in science and polar research. We will also continue to work with major Korean companies to help identify research and development collaboration partners in the UK. We plan to bring a number of these projects together, along with an additional delegation from the UK, for a 'British Science Day' later in 2007.



Netherlands

Country profile

Key S&I developments

The Netherlands occupies the 9th position on the Global Competitiveness Index (fifth in Europe). A new coalition Cabinet has just started in which the Christian Democrats (CDA), the Labour Party (PVDA) and the smaller Christian Union (CU) are participating. The Dutch economy, having grown 2.9% over 2006, is flourishing and further moving towards the Cabinet's goal to ensure the Netherlands remains one of the EU's strong performing economies. Knowledge and innovation feature highest on the economic agenda and, in line with the introduction of the Knowledge Investment Quotient (KIQ), the Dutch Government has increased its effort in energy production making substantial funds available to target its continued development.

In its Budget for 2007, the Ministry of Education, Culture and Science has earmarked an extra amount of half a billion Euro to stimulate science and technology studies. University studies have shown that in order to reach the full potential of the innovation driven economy, competitiveness should focus on added value, whereas the present focus has been on cost reduction. Henceforth, the new Innovation Platform, presided over by the Prime Minister, is refocusing its activities, aware of the fact that one quarter of its effectiveness depends on technological primacy whereas three quarters of its success will be dependent on the level of social innovation.

Looking back, looking forward

Under the title "Science Futures: Working on the Edge", the Embassy has been introducing a series of symposia, in close partnership with centres of excellence in Britain and the Netherlands. Held at the Residence of the British Ambassador in May 2007, the first in the series, entitled "The Human Enhancement Colloquium," concentrated upon innovative developments in the field of cognitive, psychopharmaceutical, and cybernetic enhancement that will largely influence the economies of the future. The second event will be a large symposium on Water Management and Coastal Defence where Britain and the Netherlands have been shown to possess exciting complementary skills, to be held again at the Residence in October. "Science Futures" as a concept seeks to stimulate the formation of bilateral networks, to discuss national policies and to exchange expert knowledge and experience in the formation of centres of excellence.

Population 16.4 million

GDP* (£ Billion) 331

Total National Research expenditure (£) 6.8 billion

Public/Private R&D spend ratio (in form Public:Private) 60:40

> Previous year growth in GDP (%) 4.6

Population 38.16 million

GDP* (£ Billion) 169

Total National Research expenditure (£) 1 billion

Public/Private R&D spend ratio (in form Public:Private) 74:26

Previous year growth in GDP (%) 5.8

*All economic data is taken from the IMF World Economic Outlook April 2007

Key S&I developments

The recently established Polish Ministry for Science and Higher Education has been busy developing a new framework for the science support system. The legal basis setting new directions for the science base is to be revamped. The main aim is to change the attitude of Polish Government officials towards thinking about science and build the system around three main pillars: science policy, financing and research. The law also introduces two new agencies, the National R&D Centre and the Agency for Cognitive Science. The former will be tasked with supervising and co-ordinating strategic research programmes and supporting the Minister in implementing science, innovation and technology policies. The latter will conduct research supporting the development of science, culture and civilisation.

The Cabinet of Ministers has already approved the law. Apart from the legal and structural changes, the science base will soon receive serious financial support from EU Structural Funds under the umbrella of one of the operational programmes called Innovative Economy.

On the pure science front, the Poles are very close to finalising their work on a brand new non-addictive morphine substitute called Difalin. Research in this area is conducted by the Polish Academy of Sciences' Institute of Clinical and Experimental Medicine and the Warsaw Pharmaceutical Institute. Difalin has already been patented; this removes one of the main barriers to market entry. If testing leads to approval, Difalin could be available on the market within 5 years.

Looking back, looking forward

S&I Warsaw is working closely with Polish and UK partners to establish an Innovation and Business Park in Wroclaw, which follows the UK model for business and academia collaboration. The aim is to provide a platform for scientists and research oriented businesses to work together on projects with commercial applications. Experts from Coventry University Enterprise, who were initially subcontracted to help get the idea off the ground decided to join as partners and are now helping the Poles to finalise the paperwork, secure financing and get the first projects running. It is hoped that the Park can be launched in 2007.

S&I Warsaw is supporting the Foundation for Polish Science in their efforts to find a partner for joint activities in the UK. The Foundation provides assistance for top class Polish scientists to make contacts and develop research cooperation with partners abroad. They have collaboration agreements with a range of well known research institutes and organisations including in the US, Germany and France and are keen to explore opportunities in the UK science market. The study visit we organised last year opened the discussion and it looks like the first joint Fellowship programme may be launched by the end of 2007.

Russian Federation

Country profile

Key S&I developments

In December President Putin signed off a bill giving the government control over Russian Academy of Science's (RAS) senior appointments, activities, budget and future structure. The expressed intention is to streamline RAS and improve its accountability, effectiveness, efficiency and economic usefulness. Effectively RAS will, for the first time, become fully accountable to the state for its use of public funds.

In September the 2007-2012 Federal R&D Target Programme was approved by the Russian Government with a total budget of £2.7 billion. The aim is to fund longer-term strategic programmes including energy saving and alternative energy technologies, life sciences, nanotechnology and new materials, IT and sustainable environment technologies.

A state venture company was set up (August 2006) to invest £300 million in the country's high-tech sector. The Russian Venture Company is set to boost technology investments and diversify the economy away from commodities. The Government aims to attract more than £600 million to the Russian high-tech sector by the end of 2007.

The State Duma is currently finalising discussion of a comprehensive package of amendments to the Tax Code providing tax incentives to organisations engaged in innovation and R&D activities.

Looking back, looking forward

Our present GOF project "British-Russian Technology Transfer Network" resulted in the creation of the British Russian Innovation Network (BRIN) and is paving the way for the Russian project partner to become a first-ever Russian member of the European technology transfer network under the EU Entrepreneurship and Innovation Programme.

With closure of the DTI Global Watch Service a major focus of our work will be building links in priority areas between the Russian S&T community and UK stakeholders using Knowledge Transfer Networks (KTNs). This will be based on the outcome of a GOF project aiming to map the Russian technology landscape. To make this exercise more effective and produce sustainable results we envisage seeking direct support from the Russian Federal Agency for S&I.

We will continue to stimulate creation of collaborations and networks in 2007/08 through a major Energy Technology event. We plan to complete our current Stem Cell campaign by arranging a series of public lectures for young scientists by senior UK experts.

We are also going to lead discussions between the relevant UK and Russian government departments in developing an agenda for the next bilateral Joint Commission on S&T, which is due to take place in London this autumn. Population 142.2 million (1 January, 2007)

GDP* (£ Billion) 489

Total National Research expenditure (£) 6.5 billion (2006)

Public/Private R&D spend ratio (in form Public:Private) 60:40

> Previous year growth in GDP (%) 6.7

Singapore

Country profile

Population 4.48 million

GDP* (£ Billion) 66

Total National Research expenditure (£) 1.55 billion

Public/Private R&D spend ratio (in form Public:Private) 34:66

Previous year growth in GDP (%) 7.9 Key S&I developments

The new S\$5 billion (£1.7bn) National Research Foundation began work, announcing funding in three strategic areas - biomedical sciences, environmental and water technologies and interactive and digital media. This is part of Singapore's drive to increase R&D investment to 3% of GDP by 2010. Singapore has also been attracting research investments from many companies world-wide resulting in R&D expenditure reaching 2.36% of GDP in 2005.

New initiatives were also announced in the biomedical sciences area - the Singapore Institute for Clinical Science and the Experimental Therapeutics Centre. The latter will undertake early drug discovery and development and will be led by Sir David Lane.

Looking back, looking forward

In July 2006, we held a major UK-Singapore conference on Building Scientific Capacity with South East Asian Partners. This conference, which was led by Sir Gordon Conway, Chief Scientific Adviser at the Department for International Development, made a number of recommendations including holding scientific workshops in other countries in SE Asia. The first of these workshops, on Fuel Cells was held in Thailand in March 2007, Further workshops in Vietnam, Thailand and the Philippines on infectious diseases and other areas are taking place in 2007/08. We expect these workshops to deepen the relationship between UK researchers and researchers from other countries in South East Asia in key areas.





South Africa

Country profile

Key S&I developments

The Department of Science and Technology (DST) have developed a tax incentives policy that will be used to encourage organisations to invest in R&D. The guidelines were approved by parliament in 2006, so DST are now in the process of implementing them and they have started looking out for possible partners to learn from and share information. They have approached post (Pretoria) for possible links with the UK.

The Ministry also launched a forum of S&T Managers in February 2007, which will be made up of all government departments. The forum's objective is to integrate S&T programmes that are developed by individual departments, to avoid duplication of effort and to encourage cooperation between different departments.

Looking back, looking forward

Together with Australia, South Africa is on the shortlist to host the world's largest radio telescope, the Square Kilometre Array, or SKA. The winner in the SKA bid will only be known by 2008, but in the meantime South Africa has started building what is called Karoo Array Telescope in the same region where they hope to site the core of the SKA. If South Africa wins the bid, the SKA will open opportunities for advanced international research.

Facilitating new (and strengthening existing) science collaboration will be a major focus of next year's programme and key priorities will include astronomy, biotechnology, energy technologies and ICT.

Population 47.4 million

GDP* (£ Billion) 127

Total National Research expenditure (£) 0.81%

Public/Private R&D spend ratio (in form Public:Private) 42:58

> Previous year growth in GDP (%) 4.4



*All economic data is taken from the IMF World Economic Outlook April 2007

Sweden

Country profile

Population 9.1 million

GDP* (£ Billion) 192

Total National Research expenditure (£) 7.56 billion (3.89% of GDP)

Public/Private R&D spend ratio (in form Public:Private) 26:74

Previous year growth in GDP (%) 4.4

*All economic data is taken from the IMF World Economic Outlook April 2007

Key S&I developments

A new four-party Government was elected in September 2006 and likely policy changes are still emerging. Innovation and job creation are some of the Government's highest priorities, and a "Council for Globalisation" has been appointed to advise on future policy direction and highlight opportunities for Sweden in a more globalised world.

Preparations are underway for a new Research Bill, due in 2008. Early indications are that plans are to announce a significant public investment in R&D in order to ensure that Sweden is not so dependent on the spending patterns of a small number of big companies for a large part of its overall R&D investments. Focus will be on quality, results, excellence and researchers' freedom.

A particular priority for Sweden in the near future is research, development and commercialisation of environmental technologies and renewable fuels particularly biofuels. Sweden is home to world-leading research and application in some of these research areas, and the new government is keen to take this forward.

Overall, whilst R&D spending remains high (3.89% of GDP), this figure is lower than in recent years partly due to private sector investments in R&D not keeping up with economic growth rates.

Looking back, looking forward

On a bilateral level, the coming year is likely to see new policy directions emerging as the Government starts delivering and making changes. Climate security and energy research will continue to be a focus for the S&I team, particularly looking at research into low carbon homes and biofuels. We intend to align our work where possible with the EU's Framework programme, in order to help UK science and scientists access partners to tackle new research challenges.

Additionally, we continue to work with colleagues in UKTI and in Copenhagen to develop the UK-Medicon Valley Academy Bioscience Alliance (www.biosciencealliance.org). This aims to increase strategic collaborations and research partnerships between the UK and one of Europe's leading bioscience regions, which crosses southern Sweden and the Greater Copenhagen area.

Switzerland

Country profile

Key S&I developments

The new Swiss Budget on Education, Research and Innovation was passed to Parliament for final approval by December 2007. It calls for a significant budget increase of 6% year-on-year from 2008, totalling £9 bn for the four years 2008-2011, with £0.5 bn allocated to EU FP research.

This new budget will support a national research network in Systems Biology with £85 million (www.systemsX.ch). There is Swiss interest in collaboration with UK Centres of Excellence.

In February 2007 the Board of the Swiss Federal Institutes of Technology approved a 4 year ICT-microtechnologynanotechnology research project NANO-TERA, worth £17 million (www.nanotera.ch).

Backed by the WHO in Geneva, the Swiss Institute of Bioinformatics will manage a new global influenza database to combat a potential bird flu pandemic. (www.smartgene.com).

Parliament authorised £12 million to build Switzerland's first category IV top safety level Nuclear, Biological and Chemical (NBC) Laboratory at a facility near Berne. Full operation is expected by 2010 (www.laborspiez.ch).

Looking back, looking forward

In 2006, Lord Sainsbury and his Swiss counterpart commissioned us and our Swiss colleague to examine the scope for a bilateral research collaboration in Systems Biology.

After visits to UK and Swiss Centres of Excellence by us, leading UK and Swiss researchers agree that an effective bilateral collaboration adds value. BBSRC recently agreed to support this collaboration with £1.5 million. The Swiss National Systems Biology Initiative is drawing up its complementary funding mechanism. We anticipate the collaboration to be launched by early 2008.

With an annual budget of £80 million, Britain is the second biggest contributor to the European particle physics laboratory CERN in Geneva. The Science and Technology Facilities Council (STFC) is investing a further £30 million to expand its CERN grid in the UK. In a high profile global experiment, the new Large Hadron Collider (LHC) particle detector at CERN is expected to be switched on for the first time early in 2008. Population 7.5 million

GDP* (£ Billion) 188

Total National Research expenditure (£) 5.6 billion (2004 latest available) 2.6% of GDP

Public/Private R&D spend ratio (in form Public:Private) 20:70

> Previous year growth in GDP (%) 2.7

Taiwan

The United Kingdom does not recognise Tiwan, nor have diplomatic relations with it. British interests are handled by the British Trade and Cultural Office.

Population 23 million

GDP* (£ Billion) 178

Total National Research expenditure (£) 4.8 Billion

Public/Private R&D spend ratio (in form Public:Private) 33:67

Previous year growth in GDP (%) 3.3 Key S&I developments

Continuing the trend established last year, government officials are looking towards Europe for collaboration partners in science, technology, and innovation (historically, the United States and Japan have been the partners of choice).

In addition, the Taiwanese government and leading industry players are emphasizing developing more advanced research capability to complement Taiwan industry's historical strength in low cost volume production, especially in the ICT sector. Key ICT industry players are looking to develop or acquire IP's in major technology sectors. Key ICT sectors with strong growth include semiconductor design, wireless communications, display industry, and consumer electronics.

In addition, there is increased budget for and interest in renewable energy, environmental technology and biotechnology by the Taiwanese government.

Looking back, looking forward

Looking back, in nanotechnology, we have raised Taiwan's profile to priority market status anchored by leading missions to two events - UK NanoForum 06 and Nano Japan 2007.

Looking forward, we will continue to build on the results from last year – such as more joint work with our UK stakeholders, in particular UKTI and British Council, especially given the increased focus by UKTI on R&D and innovation. In addition, we will continue our regional work, in particular with Japan, through events and missions in our focus sectors of ICT, Biotechnology, and Nanotechnology.

We will pro-actively work on projects and events that are likely to generate outcomes in S&T collaboration and wealth creation in our focus sectors by matching up areas of complementary strengths between UK and Taiwan academia, industry, and government in those three key focus sectors.



United States

Country profile

Key S&I developments

The US continues to lead the world in its investment in science and in its innovative economy: in 2007, the US federal government will spend £73.62bn (\$139.9bn) on such R&D, ie more than the rest of the G7 combined (and 13 times as much as China). However, the US is not complacent about its global lead, and knows that progress on key policies will determine the future course of US science and innovation. Areas such as innovation policy, stem cell research and climate change will play an important role in the US. Efforts are underway to re-examine investment in US innovation and consider legislation to enhance US competitiveness.

On embryonic stem cell research, the US continues to prohibit the use of federal funds, despite several congressional attempts to overturn this restriction. As a result, individual states have stepped in to fill the gap with billions of dollars to advance the work.

And finally, the US may have reached a turning point on the issue of global warming, with growing acceptance of the scientific evidence. Movement on climate change has accelerated in Congress and around the nation. Again, individual states have started to fill the void with California leading the way and the Northeast and Western states looking to implement emissions trading schemes.

Looking back, looking forward

In the past year, the US S&I network's achievements included support for the breakthrough in UK-US relations at the state level on climate change; the establishment of the UK as a leading international partner for California's Institute for Regenerative Medicine; and major UK-US scientific collaborations resulting in new investment in the UK science base.

With regard to funding, the US National Institutes for Health awarded US\$23 million to a UK-US mouse genomics collaboration supported by S&I San Francisco, and US\$13 million of federal funding was secured by a collaboration coming out of the Texas-UK Collaborative Research Initiative established in 2003.

Looking ahead, climate change will become a major focus of the network's activities in the US, building on the breakthroughs this year. Working to three climate change campaigns, the network will seek to raise the urgency of climate change in the US, promote carbon-emission mitigating technologies and seek to encourage the adoption of regional and nationwide carbon trading schemes. Population 301.6 million

GDP* (£ Billion) 6615

Total National Research expenditure (£) 69.67 billion

Public/Private R&D spend ratio (in form Public:Private) 42:58

> Previous year growth in GDP (%) 3.3

Annexes





London

Gavin Costigan -Head of Science & Innovation Group



the Science & Innovation Group in October 2006 Previous to

Gavin ioined

this he spent 13 years in the UK Department of Trade and Industry, 8 of them in science policy at the Office of Science and Innovation. There he had a number of different posts, including leading Research Councils Directorate, creating the UK's Large Facilities Capital Fund and Large Facilities Road Map, and reviewing governance of UK Research Council institutes.

Richard Jones -Deputy Head Science & **Innovation Group**



as First Secretary (Inward Investment) in Tokyo. During that time he worked closely with colleagues in the Embassy's S&T Section and Commercial Department and saw first hand the mutual benefits of such collaboration. He has had a range of bilateral and multilateral political jobs including, since 1985, Deputy Head of the Human Rights Unit in the FCO, DHM in Suva, and Head of Central America Section of the Latin America Department, giving him broad experience in policy and management issues.

Canberra

Fiona Glaskin - Science & Innovation Officer



as Science & Innovation Officer in April 2005. Before

joining the team, she worked at the Federation of Australian Scientific and Technological Societies and Ouestacon -Australia's National Science and Technology Centre.

Brasilia

Colin Dick -First Secretary (Economic & Trade)



Second Secretary (Economic and Inward Investment) in Singapore.

Sao Paulo

Damian Popolo -Vice Consul (Science and Innovation)



Damian ioined the Consulate in November 2006 on a secondment

from the Research Councils (AHRC). He was previously employed by the International Organisation for Migration (IOM) in Geneva and Madrid.

Cristina Hori -Deputy Science and Innovation Officer



Cristina joined the Network in July 2005, having previously worked for

UKTI at the British Consulate General in Sao Paulo. Before ioining the consulate, she worked as a system administrator and management co-ordinator in the private sector.

Camila Meneghesso -Project Manager, UK-Brazil Year of Science and Innovation



Camila joined the Network in November 2006 to work on the UK-Brazil Year of

Science and Innovation. She previously worked in managerial roles in the private sector (Marketing and Communications).

Canada

Ottawa

Julie Wright-de Hennin -Science & Innovation Officer



Julie ioined the Network in May 2002. She previously worked in medical

research at the Prince of Wales Medical Research Institute in Sydney, Australia, and for high-tech fibre optic components company JDS Uniphase in Ottawa.

Fleanor Fast - Science and Innovation Officer



of positions in both scientific research and administration, most recently working for the career service of McGill

Ryan Stark - Science and Innovation Officer



University.

the Network in January 2007. He has extensive experience in

the Canadian ICT sector, working for Nortel, as well as launching a start-up company.

Sue Farrag - Assistant Science and Innovation Officer



Sue joined the Network in April 2005. She has held a variety of positions

working for the UK government and previously worked in Beijing China.

China

Beiiina

David Concar - Counsellor (Science & Innovation)



David leads the China S&L Network and works in particular with ПК

stakeholders wishing to set up substantial collaboration programmes. His key skills are in communication and the handling of partners. He joined the FCO after a career in the media including senior posts at New Scientist and Nature.

Rapela Zaman - First Secretary (Science & Innovation)



Before joining the Network in 2006, Rapela was a research and innovation

policy consultant, working across the European member states. She is now working with UKTI to develop the network's work on innovation-related issues (assessing China's innovation capacity and identifying opportunities for inward investment in R&D). She also leads for the network on UK/China space science research.

Du Ying - Head of Liaison (Science and Innovation)



Du Ying previously worked at the Chinese Foreian Ministry, in

Suriname and the Netherlands. She joined the British Embassy in 1996 as a senior commercial representative and transferred to the S&I Network in 1998.

Katy Fu - Project Officer (Science and Innovation)



Katy joined the S&I Network in May 2005 in the middle of the UK-China Partners in

Science initiative. Katy's main responsibilities are coordinating science and innovation projects, liaising with partner organisations, press/media work and research for the Science Counsellor and Science First Secretary. She previously worked for the New Zealand Immigration Service and as Culture Exchange Coordinator in Japan.

and Office Manager Before joining the Network in

April 2006, Jing studied in the UK and obtained a

Jing Cai - PA to Science

and Innovation Counsellor

MSc degree in E-Commerce. Her main responsibilities are acting as a communication hub for the China S&L Network, organising the Science Counsellor's visits and diary, assisting in research work and projects.

Else Christensen Redzepovic - National Manager, UK/China Partners in Science Programme



private organisations across Europe and Australia. Her passion in work is project innovation, network cooperation and stakeholder engagement. Else joined the FCO in January 2007.

Laurence lia -Communication Officer, UK/China Partners in Science Programme



Laurence previously worked for the Ice Desian in Australia prior to

joining the Science & Innovation team in Beijing in Jan 2007. Co-ordinating with SIN and PPA colleagues, Laurence is working on communication and event management to support the UK/China Partners in Science Programme.

Shanghai

Julia Knights - Consul (Science & Innovation)



senior policy advisor for biofuels and crops for heat and electricity. Her China S&I network role includes leading on biomedicine and jointly leading on

sustainable development and climate change. Previously, Julia worked in Paris to investigate France's renewable energy policies and before that, she worked as an agricultural advisor on farms in the east of England for Defra. Prior to this Julia was a soil research scientist at Rothamsted Research for 3.5 years, funded by the BBSRC. She has published in international peer reviewed journals including some with Chinese scientists. She has a PhD in soil biogeochemistry, and MSc in crop protection and a BSc in soil science.

Bronte Zhang - Project Officer (Science & Innovation)



Bronte joined the S&L Network in Shanghai in 2004 with a BA degree in

economics and previous work experience in visa section. She has been largely involved with the implementation of Partners

in Science events and post based projects. A few examples are UK-China Polar science workshop and F1 motorsport media trip. She will be helping to lead on some life science, sustainable development and climate change projects in 2007.

Peter Sun -Senior Project Officer



(Science & Innovation) Peter joined the S&L Network in Shanghai in

September 2006. His current work includes leading on nanotechnology, stem cells and healthcare and initiating joint projects within FP7. Previously, he worked as a university lecturer and a researcher at Shanghai Innovative Research Centre of Traditional Chinese Medicine. Before that, he was a visiting researcher in Japan. He also undertook graduate studies in the US. Peter holds a MSc in Pharmacognosy from Fudan University and a BSc degree in Applied Chemistry from Shanghai Jiao Tong University.

Chongging

Grace Lang -Senior Project Officer (Science & Innovation)



Grace joined the S&L Network in September 2004. She is responsible for

the delivery of science events in Southwest China. She also works extensively with the materials science community in China to co-ordinate joint collaboration activities.

Guangzhou

Nigel Birch - Consul (Science and Innovation)



Network in May 2005 from the UK Research Councils, where he managed

science and engineering programmes and international relations with the Engineering and Physical Sciences Research Council.

Adee Zai - Science and Innovation Officer



Adee Zai took up her current post in May 2005 having previously studied in the

UK for two years as a research student at the University of Warwick. Adee holds a MSc by research in e-Business and a BSc in Computer Science. Her current role covers assisting the Deputy Director of China SIN network for his daily work; co-ordinating all the Partner in Science projects in Guangzhou post, and to expand the section's network of contacts in South China, especially in Climate Change & Environment, Energy, Biodiversity, and ICT.

Czech Republic

Praque

Otakar Fojt – Science & Innovation Officer



Otakar took up the newly created post of S&I Officer in Prague in October

2003. He previously worked as a specialist on international projects at Brno University of Technology and as Managing Director of a small technological company, Sincotron.

Copenhagen

Mogens Olsen - Science & Innovation Officer



Mogens has 17 years of business experience from Philips Denmark,

Philips Australia, RE Technology and Peek Traffic. He joined the British Embassy in Copenhagen in May 2003.

France

Paris

Simon Buckle - Counsellor (Global Issues)

Simon took over in Paris in July 2006 following a spell as Deputy Head of Mission in Kabul. Before joining the FCO in 1986, he was a theoretical physicist. Simon has also worked as an economist at the Bank of England.

Mark Sinclair - First Secretary (Science & Innovation)



Mark joined the Paris team in September 2006 having previously established

and led the S&I team in Boston. Mark's background is in technology and science policy in Government.

Dara Brice - Science & Innovation Officer (until June 2007) Dara joined the S&I team in May 2005. She comes from a background in public relations for life sciences: her previous job was Director of Communications for the Rhone-Alps cancer research network.

Kathy Carvalho - Science & Innovation Assistant



posting with the Ministry of Defence. In May 1996, after 4 years in Paris, she left the MOD and returned to the Embassy as a locallyengaged member of staff.

Germar

Berlin

Alison Pring - First Secretary (Science & Innovation)



Alison arrived in Berlin in August 2004. She was previously Deputy

Director, Trade & Investment in Berne, where she worked closely with her S&I colleagues. She has also had postings to Brussels, Caracas and St Petersburg, and has experience of a wide range of diplomatic work.

Ursula Roos - Science & Innovation Officer



Ursula has an MSc in Translating/ Interpreting and a PGDip in Economics.

She joined the German S&I team in September 1996 and has a wealth of experience across the board. Her current areas of expertise include the life sciences, particularly stem cells/regenerative medicine, nanotechnology and science policy issues. She has recently acted as mentor for another member of the SIN global network.

Heike Hammelehle -Science & Innovation Assistant



Heike joined the Berlin S&I team in August 2004. She previously worked as an

assistant for international companies in Germany, Switzerland and Colombia.

Munich

Steve Plater - Counsellor (Science & Innovation)



Steve has been in Munich since December 2003. His FCO experience

includes promotion of exports (in Japan) and inward investment. As Consul-General in Munich he is in charge of trade and investment promotion, consular and other work in Bavaria. As Counsellor he has oversight of the Germany S&I team.

Muzinée Kistenfeger -Science & Innovation Officer



araduate of Munich University, ioined the German S&I

Muzinée, a

team in April 2001. She has over 10 years' experience in foreign languages journalism including science and education issues. She is the team's expert for Southern German science and research.

India

New Delhi

Rob Daniel - First Secretary (Science & Innovation)



FCO S&L Network in November 2005. Before that he

worked with the Canadian High Commission in London, and as an engineer with the Ministry of Defence, subsequently OinetiO.

Swati Saxena - Science & Innovation Adviser



Swati joined the S&L Network in August 2003. She previously worked for

Monsanto on researching genetically modified crops, and exploring regulatory aspects of their commercialisation in India.

Rita Sharma - Science and Innovation Advisor



Rita ioined the S&I team in New Delhi in November 2006. Prior to that she was

doing her PhD in Cell Biology at LMU, Munich.

Leena Arora - Science and Innovation Advisor



Leena joined the S&L Network in May 2007. She has done a B.Tech in

Biotechnology and has undertaken projects in Formulation Development, Quality Assurance and Contraceptive Vaccines during her course.

Bangalore

Kathleen Maclean -Second Secretary (Science & Innovation)



Kathleen ioined the S&I Network in March 2007. Kathleen previously

worked for DTI – briefly in UKTI Business Group and prior to this in the Office of Science & Innovation working on UK science funding policy. She also worked in the DTI's Energy Group in Oil & Gas and has a degree in Geology.

Victoria Shyju – Science & Innovation Officer



Victoria ioined the FCO S&L Network in January 2007. Victoria earlier worked for an

International Recruitment Company as Secretary.

Mumbai

Lisa Rodrigues – Science & Innovation Adviser



S&I Network in December 2006. Before joining the network, she UK Trade &

Lisa ioined the

worked with UK Trade & Investment as part of the Inward Investment Group.

Sheryl Anchan – Science & Innovation Officer



Sheryl joined the S&I Network in December 2006. She previously

worked with the Management section of the British Deputy High Commission, Mumbai.

Isra

Tel Aviv

Adee Matan - Science & Innovation Officer



Adee has worked in product management and R&D for

companies in

the fields of machine translation, workforce management and ecommerce. Adee took up the S&I post in Tel Aviv in January 2002.

Ita

Rome

Ashley Prime - First Secretary (Science Trade and Innovation)



the British Embassy in Rome in March 2003 with

Ashley joined

responsibility for Science and Innovation, Trade Policy, and UK investment in Italy. He previously worked on the USA desk in the FCO and served most of his FCO career in China. He worked for a number of years with Chinese companies who were looking to undertake R&D in the UK.

Laura Nuccilli - Science & Innovation Officer



Before joining the Embassy, Laura worked in the Italian Parliament with the

Green Group dealing with issues such as sustainable development, biotechnology and GMOs.

Milan

Alessandra Ferraris -Science & Innovation Officer



Alessandra took up her post in 2002. She has 6 years research experience,

having worked for a major Italian pharmaceutical company managing R&D projects on respiratory disease therapy. She is coauthor of several patents in the field of pharmaceutical technology.

Japar

Tokyo

Chris Pook - Counsellor (Science and Innovation)



Before moving to Tokyo in December 2005 Chris was Secretary

to the UK's Technology Strategy Board. He has held various posts in the DTI and also worked as Science Attaché at the British Embassy in Washington. He spent two years on secondment to BG plc and has a research background in microbiology and genetic engineering.

Ed Wright - First Secretary (Science & Innovation)



Ed previously worked in Tokyo at the Japanese Pharmaceutical Manufacturers

Association, before returning to the UK as a technology investment analyst. Ed joined the FCO in 2004 as Consul (Science & Innovation) at the British Consulate-General in Osaka, and took up post in Tokyo in June 2005.

Paul Johnson -First Secretary (Science & Innovation)



Following an early career in overseas oil exploration and geo-technical consulting, Paul

became Head of the Department for Transport's (Highways Agency) Forward Planning and Technology team, including a secondment to the Japanese Ministry of Transport. Paul has been with the Science and Innovation Network and FCO for 2 years.

Ryozo Tanaka – Senior Science and Innovation Officer

Ryozo joined the S&I Network in April 2005. He previously

worked as a civil engineer mainly in the nuclear energy sector and as a researcher at the Ministry of Trade, Economy and Industry, monitoring the world oil market.

Nahoko Nakayama – Global Opportunities Fund Programme Manager



Nahoko joined the Network in August 2006 to manage the UK-Japan

bilateral science and innovation programme. Nahoko previously worked for the US Agency for International Development in Washington to manage health programmes and for the US Embassy in Hanoi to manage the HIV/AIDS programme.

Seiko Oya - Science and Innovation Officer



Seiko Oya joined the S&I Network in 1995 and is responsible for researching

and organising bilateral visit programmes, missions and events.

Tomoko Watanabe -Science and Innovation Officer



Tomoko joined the S&I Network in August 1996. Her responsibilities

include researching and organising bilateral visit programmes, missions and events.

Kaoru Kambe - Science and Innovation Officer



Kaoru joined the Embassy in October 1997. Her responsibilities include

researching and organising bilateral visit programmes, missions and events.

Natsuko Nito -PA to Counsellor



Natsuko joined the S&I Network in February 2006 after working for a

Japanese University and as a secretary for a UK based private enterprise.

Yumiko Yamashita -Science and Innovation Assistant



Yumiko joined the S&I Network in November 2004. She previously

worked at the Norwegian Embassy in Tokyo.

Ichiko Fuyuno -Senior Science and Innovation Officer



Ichiko ioined the Network in May 2007, after working as a Tokyobased

contributing correspondent for Nature for two years. Before that she was an assistant/reporter for Far Eastern Economic Review magazine, and started her career at Japan's Nikkei business daily as a translator.

Osaka

Robert Morini - Consul (Science and Innovation)



Rob joined the Network in November 2005. He previously worked at the

Royal Society, where he was responsible for the Society's policy and collaboration with countries in Asia.

Sachiko Yoshida - Science and Innovation Officer



previously worked for the City of Kobe.

Malaysia

Kuala Lumpur

LuAi Chan – Science & Innovation Officer



the newly created post of S&I Officer in Kuala Lumpur in

April 2007 after working with UKTI at the British High Commission Kuala Lumpur for three years.

The Hague

Leo Zonneveld - Science & Innovation Officer



appointed S&I Officer in The Haque in 2001. He is Honorary

Professor at the Faculty of Psychology and Social Sciences at the Universidad de Flores in Buenos Aires and was granted a Maltese Order in 1991.

New Zealand

Wellington

Steve Thompson - Science and Innovation Promoter



Steve ioined the Hiah Commission in Wellington in May 2007 on a two

vearcontract to develop UK-NZ science collaborations which show promise of moving to commercial collaborations. His first emphasis will be in the lifeand agricultural

sciences, plus links in the nanotech, ICT and visualisation fields. He comes from a background of agricultural science and resource economics in the UK, Canada and New Zealand, where he was latterly CEO of the Royal Society of NZ.

Poland

Warsaw

Izabela Van den Bossche -Science & Innovation Officer



Izabela joined the Embassy in 1998 as a Press Officer. and has been working on

science and technology since 2004. She previously worked for Alcatel in Belgium and for BOC I td in Poland

Republic of Korea

Seoul

Thomas Mark Tomlinson -First Secretary (Science, Innovation and Environment)



Mark joined the Network in August 2002, taking up his post in Seoul in 2006

after three years as science officer in New Delhi. Mark has a physics background and spent several years in the private sector before becoming a career diplomat in 1992.

Hark Choi - Senior Science & Innovation Manager



Hark joined the team in February 2007, having previously worked as

Senior Investment Officer at the British Embassy in Seoul.

Hyeyoung Kim - Science & Innovation Manager



Hyeyoung joined the team in August 2004. Past

experience

includes working at Templeton Asset Management Ltd and the Australian Embassy in Seoul.

Mijeong Lee - Science & Innovation Officer



Mijeong joined the team in June 2003. She previously worked for the

Korean Broadcasting System and a leading law firm in Seoul.



Moscow

David Vincent – First Secretary (Science & Innovation)



David joined the British Embassy in April 2005 from the DTI. He was

previously Director of the UK-Russia Closed Nuclear Cities Partnership, and has a background in managing nuclear safety and security programmes with countries including Russia and Kazakhstan.

Mikhail Lachinov – Science & Innovation Officer



Mikhail joined the British Embassy in September 2004 after moving back

to Russia from Canada where he worked as a research engineer for hightech fibre optic instruments company JDS Uniphase in Ottawa.

Liya Korobova – Science & Environment Officer



Liya joined the British Embassy in 1994. Prior to this she was a DEID

Environment Officer.

Singapore

Singapore

Brian Ferrar – First Secretary (Science & Innovation)



Brian spent most of his early career in the UK Department of Energy

before joining DTI, where his work included the Foresight Programme and the International Technology Service. Brian joined the British Embassy in Tokyo in 2000, and moved to his current position in 2004.

Christopher Tan - Senior Science and Innovation Officer



Christopher ioined the S&I Network in Singapore in May 2005. Prior to this he

was working in Malaysia and China. He obtained his first degree in Chemical Engineering from UMIST and subsequently an MBA from the University of Nottingham as well as a MSc in Health Service Management from Flinders University, Australia.

Vanessa Choo - Science and Innovation Officer



Vanessa joined the S&L Network in Singapore in 2004. She is a araduate in

Life Sciences from the National University of Singapore (NUS) and has subsequently obtained a Diploma for Graduates in Social Sciences from the University of London.

South Africa

Pretoria

Thabisa Mbungwana -Science and Innovation Officer



worked for an energy company as an environmental advisor and has also worked for government in environmental policy formulation.

Stockholm

Alice Hague -Second Secretary (Science & Innovation)



Alice joined the British Embassy in Stockholm in April 2003 having

previously worked as Education Manager in an interactive science centre in Dundee and for the Royal Society of Edinburgh.

Sofia Norberg - Science & Innovation Officer



Sofia ioined the Science & Innovation team at the British Embassy in

Stockholm in September 2004. Previous work experience includes managing projects for Stockholm universities and local organisations focusing on S&T issues.

Switzerland

Berne

Bernhard Sander - Science & Innovation Officer



joined the Embassy in Berne from the private sector in

2001. He has previously worked for engineering, tunnelling and

management consultants.

Daniel Siegenthaler -Science and Innovation Adviser



Daniel joined the British Embassy in Berne in February 2007 after

having finished his Bachelor of Business Administration at the University of Applied Sciences in Berne.

Taiwan

The United Kingdom does not recognise Taiwan, nor have diplomatic relations with it. British interests are handled by the British Trade and Cultural Office.

Taipei

Douglas Huang – Head of Science and Innovation Section



Douglas joined the S&I team in May 2005. He spent most of his previous career as an

investment manager at local VC firms and a corporate VC.

Ginell Hsu – Science & Innovation Officer



Ginell joined the S&I team in February 2001 having previously worked in the

BTCO visa-handling unit and in the private sector for 2 years.



Washington

Julian Braithwaite – Counsellor (Global Issues)



Julian joined the S&I Network as Head of the Global Issues Group in

2004. He leads the Trade, Transport, Energy/ Environment, and Science/ Innovation policy teams in the Embassy. Before coming to Washington DC, Julian most recently served as Director of Communications to the Office of the High Representative in Sarajevo. Julian has also previously worked for Number 10, the United Nations and NATO.

Dr. Phil Budden – First Secretary (Science & Innovation)



Phil joined the S&I Network in mid-2004 as the First Secretary responsible for

Innovation, Science and Technology. He has been at the Embassy since 2002 covering a range of information and communications technology (ICT) issues. He previously worked in the Cabinet Office, Foreign Office and British Embassy in Vienna on a range of European, economic and high-tech issues. In mid-2007, he moves to Boston (Massachusetts) to take over as Britain's Consul General for New England.

Joshua Mandell – Senior Policy Advisor (Science & Innovation)



Prior to joining the Embassy in 2003, Joshua Mandell was an

environmental

scientist and policy consultant to the United States Air Force. Joshua also spent 6 years in the private sector where he performed services in geology, hydrology, geographic information systems, remote sensing and environmental regulatory policy.

Jonathan Temple – Policy Advisor (Energy & Environment and Science & Innovation)



Jonathan advises on a full range of energy policy issues including

energy technology development and energy markets. Jonathan has worked in the Embassy since 1988 and before that worked in the UK nuclear sector.

David Muller – Senior Policy Advisor (Science & Innovation)



David joined the British Embassy team in Washington after spending two years as

Vice Consul for Science & Innovation in Atlanta. He previously worked in management at an international energy corporation based in Atlanta.

Atlanta

Kerry Norton – Vice Consul (Science & Innovation)



Kerry Norton is an analytical chemist by training. She joined the Atlanta SIN

team in March 2007, having previously worked in the pharmaceutical industry, specialising in the research and development of transdermal drug delivery using a unique application system.

Boston

Dr. Stefan Winkler -Consul (Science & Innovation)



Stefan joined from the technology consultancy Arthur D Little where he

managed biotechnology R&D. Stefan also teaches undergraduate and graduate students in bioengineering at Tufts University where he holds an adjunct faculty position. He joined the Boston team in May 2002 as Vice-Consul, taking the position of Consul in 2006. Dr. Naomi Ridge - Vice-Consul (Science & Innovation)



from the Harvard College Observatory, where she worked as a postdoctoral researcher in astrophysics. She remains a Research Associate at the Smithsonian Astrophysical Observatory in Cambridge, MA.

Neelangi Gunasekera – Associate (Science & Innovation)



joined the Network in 2003. She previously worked in

Neelangi

Investor Relations at Weber Shandwick in Chicago and RepliGen Corporation in Massachusetts.

Houston

Dr. May Akrawi - Vice-Consul (Science & Innovation)



May joined the British Consulate-General in Houston in April 2002, to

set up the S&I team in the Southwest. Her research career focused on molecular biology and in vitro toxicology. She has worked as a science analyst for a major US law firm, and most recently set up the European office for a US biotech company.

Catherine Santamaria – Associate (Science & Innovation)



Catherine joined the British Consulate-General in February

2005. She previously worked in Japan for a Japanese business software company and at the Houston World Affairs Council, promoting awareness of international issues and U.S. foreign policy.

Los Angeles

Andy Perkins - Vice-Consul (Science & Innovation)



Andy has BSc and MSc degrees in electrical engineering from Stanford

University as well as a year of post-graduate work in Cognitive Neuroscience at Duke University. Most recently Andy has been working as an aerospace engineer with Raytheon Company in El Segundo, CA.

Beverly Xu – Associate (Science & Innovation)



the S&I Network in January 2006, Beverly supported

Before joining

global marketing operations in two companies based in Southern California.

San Francisco

Annabelle Malins - Consul (Science & Innovation)



Annabelle joined the FCO in 1999 and took up post as Consul for S&I in

October 2005. She is a diplomat with 20 years' industry background in food and agriculture including international research and technical consultancy. She previously worked as principal scientist and training specialist at the Natural Resources Institute, UK.

Dr. Stephen Lynn -Vice-Consul (Science & Technology) (until April 2007)



Stephen took up his post as Science and Technology Vice Consul in November

2003. He previously worked as a scientist on the genetics of diabetes and mechanisms of neurodegeneration.

Maike Rentel - Vice-Consul (Science & Technology)



Before joining the S&I Network in April 2007, Maike worked as a research

scientist on plant and mammalian immune systems at UK and US universities. She has also held a fellowship with the Committee on Science, Engineering, and Public Policy, at the National Academy of Sciences in Washington, DC.

Theresa Djirbandee – Associate (Science & Innovation)



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