Foreign &
Commonwealth
Office

BIS | Department for Business Innovation & Skills

Science and Innovation Network

Report: April 2010 to March 2011

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Foreword

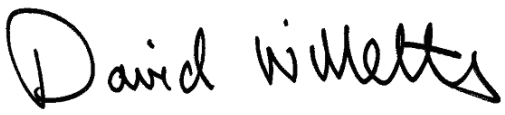
Science and innovation are critical to tackling major global challenges such as food security and climate change. They are also central to our plans for rebalancing our economy and sustaining economic growth.

The UK already performs strongly in science, and the Government is working to ensure that the UK remains a world leader in science and research by continuing support for the highest value scientific research. We recognise the importance of international collaboration in research and innovation, both in strengthening the UK science base and sharing expertise in tackling global challenges.

Policymaking needs to be underpinned by a strong evidence base. It is therefore important that we continue to contribute to and draw upon the best international science to enable ourselves and others to make evidence-based decisions.

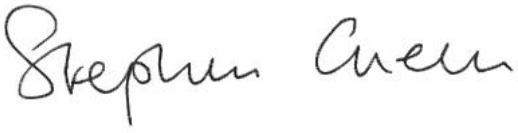
The Science and Innovation Network plays an important role in bringing our scientific community together with those working around the world. Based in our Embassies, High Commissions and Consulates, the Science and Innovation network uses its many contacts to monitor global scientific developments and build new relationships and collaborations.

This report highlights some of the many excellent achievements of the Network during the year from April 2010 to March 2011.



David Willetts MP

Minister of State for Universities and Science



Lord Green of Hurstepierpoint

Minister of State for Trade and Investment

Introduction

Science and Innovation at the heart of the UK's growth strategy

The Government understands the key role of science and innovation in rebalancing the economy. For this reason they lie at the heart of the UK's strategy for sustainable growth and prosperity. The UK is already a world leader in science and research; using the measure of citations as a proportion of GDP, the UK is the strongest performer in the G8[1]. International collaboration gives us the opportunity to build and capitalise on this strength, creating links to other centres of excellence in both the developed world and emerging economies, drawing in new ideas from around the world and stimulating innovative thinking.

"The Government has also prioritised current spending which helps deliver outcomes that support growth, including a strong science and research base." [2]

Strong, collaborative science and innovation play an equally important role in underpinning the evidence-based international policy dialogues we need in order to successfully tackle global challenges such as food security and climate change.

It is for these reasons that the Department for Business, Innovation and Skills (BIS) and the Foreign & Commonwealth Office (FCO) jointly fund a network of Science and Innovation Officers around the world. The network supports the priorities of both BIS and the FCO, and its business planning process ensures that it remains responsive to the needs of the UK.

The network is able to identify and deliver opportunities, bring insight to UK policymakers and exert influence around the world. SIN promotes strategic partnerships between UK and international science and innovation communities to enhance research, business and policy interests.

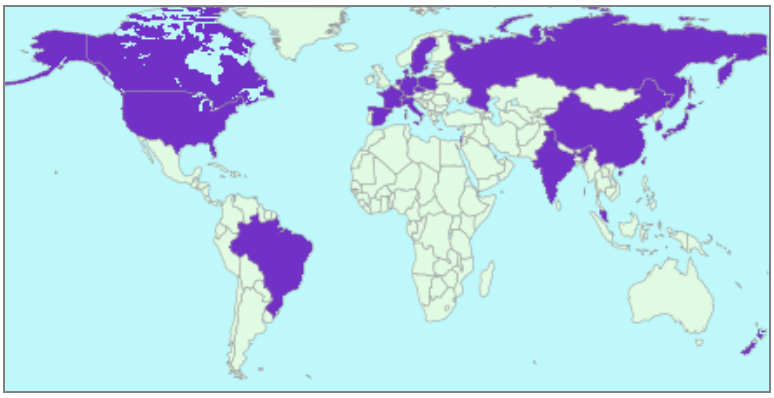


Figure 1. Countries and regions where the Science and Innovation Network has staff in Embassies, High Commissions and Consulates.

The Science and Innovation (S&I) network supports the priorities of both BIS and the FCO, linking into wider departmental workstreams through the International Knowledge and Innovation Unit (IKIU) at BIS and the office of David Clary, the Chief Scientific Advisor at the FCO.

[1] BIS (2009) International Comparative Performance of the UK Research Base
[2] HM Treasury (2010) Spending Review 2010

The Science and Innovation Network is Global

Our Science and Innovation officers are based in Embassies, High Commissions and Consulates around the world. We have around 90 staff in 25 countries and territories. This network enables us to understand the local science and innovation landscape and, when combined with our knowledge of the UK, gives us a unique position.

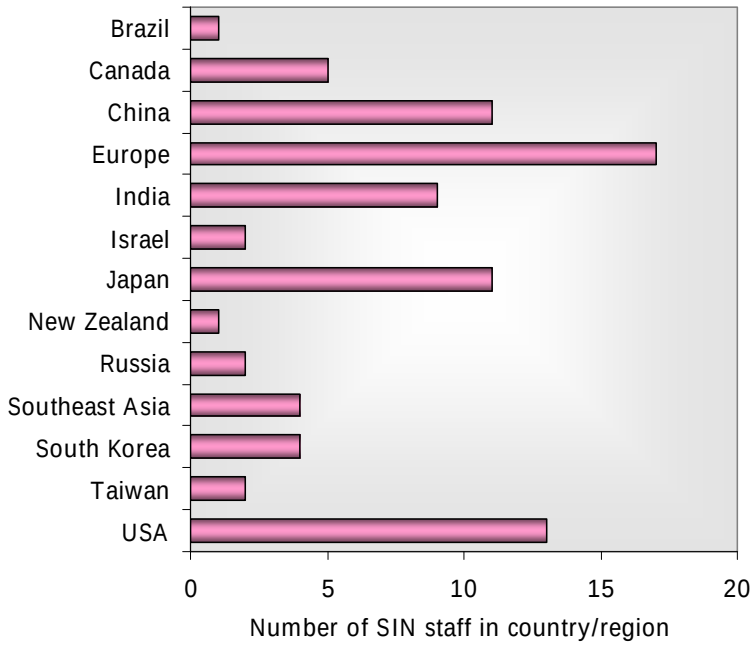


Figure 2. Number of positions in the Science & Innovation Network. Some positions are part-time.

Objectives of the Science and Innovation Network

The work of the network is guided by the following objectives:

Influence

- Science & innovation policies of governments, businesses and academia influenced to benefit the UK through lobbying and deployment of robust scientific evidence.
- UK policy development informed through identifying good practice internationally

Opportunity

- International science collaboration of best with best facilitated to the benefit of the UK
- International innovation collaboration facilitated to augment UK capabilities.

This report showcases examples of work of the Science and Innovation Network in all areas of these objectives. A small selection of the successes of the SIN is contained in the next three sections, with further examples accompanying profiles of each country or region. The final section of this report is a directory containing details of members of the SIN team in each country or region.

Facilitating International Innovation Collaboration

Developing and harnessing innovation is key to creating new opportunities in science, policy and business, all of which should contribute to UK long-term prosperity and growth.

This section contains selected examples of the Science and Innovation Network's work in facilitating international innovation collaboration. Further examples are given in the profiles for individual countries and regions later in this report.

Collaborations on carbon capture and storage between the UK and Japan

The S&I Tokyo team have promoted UK-Japan collaboration on carbon capture and storage (CCS) since 2008, delivering a number of outcomes throughout 2010: a researcher at the University of Nottingham was invited as a visiting professor to the University of Tokyo; joint marine monitoring research took place in Okinawa; and Japanese research organisations joined two FP7 projects led by UK experts. Further projects are under development, including a Japanese company participating in an industry consortium for carbon adsorption R&D led by a UK university; a joint project on storage, injection and monitoring; collaboration agreement between universities; and Japanese experts' involvement in a NERC funded project.

Innovation and the Secretary of State's visit to Brazil

SIN organised activities for Vince Cable's visit to Brazil in August 2010. These included supporting the Joint Economic and Trade Committee (JETCO) Ministerial meeting for the Innovation Workgroup and bringing UK spin-out companies to participate in the discussion; as a result, an agreement was set up with the Brazilian government on promotion of trade and investment between innovative small and medium enterprises from both countries.

SIN organised the UK-Brazil Cross Border Investment Opportunities Forum in partnership with the Getúlio Vargas Foundation, bringing over 160 participants from investment funds to participate in discussion about bilateral collaboration, including opportunities to fund innovative companies.

Figure 3. Vince Cable speaks at the JETCO meeting in Brazil, August 2010.

Influencing on Intellectual Property in Poland and the Czech Republic

SIN in Poland and Czech Republic are engaged in work on the European Unified Patent and Litigation system. They have responded to lobbying requests, and supported visits to Prague and Warsaw by John Alty, CEO of the Intellectual Property Office. The UK Patent Office and UKREP were informed about the latest Polish and Czech thinking on IP issues and activities taken forward during the Czech EU presidency. The IPO's Director of Copyright and Enforcement Directorate visited Poland to discuss the forthcoming Polish EU presidency priorities on copyright dossiers. He also met with the Polish team responsible for the National Strategy for Combating Copyright Infringements.

"It was the science and innovation focus of our recent water mission to The Netherlands that determined its success."

- David Neil-Gallacher, CEO British Water

Sustainable Water Technology in the Netherlands

Jointly with Cranfield University and British Water, SIN Netherlands organised a UK Mission to the Netherlands to learn first-hand about Dutch innovation excellence in the water sector and strengthen collaboration between the two countries. The programme included visits to major research organisations, innovative businesses and government departments to discuss innovative solutions for the provision of clean and safe drinking water, sustainable treatment of waste water and climate change adaptation. One of the highlights was a visit to a pilot project on Blue Energy – a truly sustainable way of generating electricity from water. Discussions indicated a great deal of potential for collaboration.

Collaboration on green electronics

The S&I Network organised a seminar in Sweden in 2010 where academics, business and policy makers discussed how ICT and devices can cut their energy consumption e.g. using mobile phones as carbon dioxide sensors, or using crowd sourcing to visualise and cut energy use. Contacts were established between the Sensors and Instrumentation Knowledge Transfer Network and Photonics 21, Fujitsu UK, the National Physical Laboratory, VINNOVA, TEKES and VTT. The Knowledge Transfer Network invited Swedish electronics companies to the UKTI event Technology World. The S&I team will run a follow up event on wireless sensor networks with the ICT KTN in 2011

Developing collaborative links with China

SIN China ran seven lively workshops in the UK in Autumn 2010 attended by over 300 researchers, academics, university spin-outs and innovation experts to discuss Chinese science, opportunities and how to develop collaborative links with Chinese scientists. Attendees heard how SIN China can help universities to develop research links and collaborations through China SIN policy engagement, reporting, workshops and seminars. A number of new work areas have been generated from this initiative, including electric vehicles, smart grids and water desalination.

Facilitating International Research Collaboration

International collaboration can enhance the quality of scientific research and development as well as opening additional avenues for financial and logistical support. The Science and innovation Network remains alert to opportunities for collaboration and actively seeks to support and promote work with international partners which might benefit the UK.

This section contains selected examples of the Science and Innovation Network's work in facilitating international research collaboration. Further examples are given in the profiles for individual countries and regions later in this report.

"This collaboration makes the most of the world-class research centres we have in the UK and shows that working together and sharing the latest science and innovation can have global benefits."

- David Willetts, Minister for Universities and Science

BBSRC-Vietnam Rice Genome Sequencing Project

As part of tackling the global threats, SIN Singapore facilitated a new £300k+ funding agreement between BBSRC through the John Innes Centre, and Vietnam's Ministry of Science and Technology through the institute of agricultural genetics, to apply genome technology to help plant breeders understand and choose strains of rice with drought/pest/saline/flood tolerance. This project represents the application of science to solve climate change, agriculture, food security and also sustainable development challenges. Vietnam is estimated to be amongst the 10 countries worst-affected by climate change, with the projected loss of major rice growing regions through floods and saline intrusion.

UK-Poland collaboration in life sciences

In November 2010 a group of 17 medical researchers from across Poland visited the Babraham Institute in Cambridge. The aim of the visit was to explore opportunities for collaboration between the research communities. As a result of the event, the Jagiellonian University and the International Institute of Molecular and Cell Biology plan to exchange students with the Babaraham Institute, and the former is going to sign an Erasmus contract. Furthermore, individual researchers started to conduct research in partnerships, exchange data and biological material collections. Babraham Bioscience Technologies managers have offered to consult management from EIT+ Centre on establishing a bioincubator and animal research facilities in Wroclaw.

Figure 4. Researcher at work at the Babraham Institute

Collaboration in Neuroscience and Obesity between Canada, the USA and UK

SIN Canada co-hosted a three day symposium at McGill University, to share knowledge on the brain's role in obesity epidemics. It brought together leading scientists from 17 universities from Canada, the UK and the US in neuroscience, neuro-economics, genetics, endocrinology and psychiatry. A broad public conference gathered 230 participants, including researchers, students in health sciences and nutrition, health professionals and dieticians, representatives of Canadian funding agencies, companies and NGO representatives. One of the key outcomes was to identify key research priorities and knowledge gaps on the brain's role in obesity which will be published in a review paper. This event was a unique opportunity to access the cutting-edge knowledge and thinking on the brain factors in obesity, from a multi-disciplinary perspective.

UK-Russia Year of Space 2011

S&I Russia highlighted the UK's expertise in satellite technology, astrophysics and space research through design and implementation of a "UK-Russia Year of Space 2011" which was launched by Minister for Universities and Science, David Willetts, in Moscow in February 2011. A Joint Statement signed by the acting Chief Exec of the UK Space Agency, David Williams and Head of the Russian Federal Space Agency allows both countries to work on a raft of space research, educational and cultural activities.

Figure 5. David Williams (UK Space Agency) signs a Joint Statement with Mr Perminov (Russian Federal Space Agency).

Joint research projects include a space medicine treaty (between UCL & the Russian Institute of Biomedical Problems); a fluids in microgravity experiment at the International Space Station; a "Twinsat" project (between UCL & Institute of Physics of Earth) and a joint project on crew psychology.

Cultural activities to celebrate the 50th anniversary of Yuri Gagarin's heroic space flight include a lecture by cosmonaut Sergei Krikalev at London's Science Museum. S&I Moscow held two successful Space Science Cafés in February on "Mars500 and crew psychology" and on satellite innovations in predicting extreme weather".

Figure 6. Dr Julia Knights, Head of SIN Russia, talks through the programme for the UK-Russia Year of Space with David Willetts, David Williams (UKSA) and HMA Anne Pringle.

Collaborating with India on Space Science

The UK also cemented its space relationship with India, with the signing of a new Memorandum of Understanding between the UK Space Agency (UKSA) and the Indian Space Research Organisation (ISRO) in 2010. The MoU was facilitated by SIN India and identifies three areas of potential collaboration including cooperation in climate change models using space data and a series of joint satellite technical demonstration programmes using satellite platforms from UKSA and launch services by ISRO.

UK-Southeast Asia team receive £5.3m to tackle dengue virus

A consortium including partners from the UK, Vietnam, Malaysia, and Indonesia who met at a SIN organised workshop have joined forces with partners from Cambodia and various Latin American and EU countries, and secured in principle funding of £5.3 million from the EU to carry out an integrated programme of research to tackle the dengue virus. The consortium will focus on risk assessment, management and surveillance of the disease.

Collaboration in Cultural Heritage Conservation

Work by SIN Italy to connect Italian and British scientists resulted in a Memorandum of Understanding between University College London on behalf of its Centre for Sustainable Heritage and the Italian National Research Council on scholarly and scientific co-operation in the field of research applied to the protection of cultural heritage. This was followed by a round table meeting at the Ambassador's residence in Rome where UCL and CNR drafted four project proposals on: climate change and cultural heritage, imaging and standards; collection materials, environment and energy; and wear of outdoor stone. Further visits will be in place to explore required resources.

"...the workshop held in Rome in March 2010 on innovative technologies applied to the conservation of the Cultural Heritage was the most fruitful in the past five years"

- Cristina Sabbioni,
Acting Director of the Institute of Climate & Sciences of the Atmosphere

Collaborating with India on Water Cycles

The Science and Innovation Network (SIN) in India facilitated joint working between the Natural Environment Research Council (NERC) and the Indian Ministry of Earth Sciences to commit funding of up to £2.5 million each for joint research projects in the area of Changing Water Cycles. The SIN team, alongside the Research Council Office in India, assisted the two funders at each stage of this cooperation. Through a joined-up approach for the call for outline bids, six projects have been selected for funding in globally relevant areas like climate change and water management.

Influencing Internationally

The Science and Innovation Network strengthens both the evidence base of UK policies and the international engagement needed in key global debates on issues from climate change to resource security. Science and innovation collaboration may also play an important role in enhancing broader bilateral relationships between the UK and partner countries, including emerging economies.

This section contains selected examples of the S&I network's work in informing and influencing international policy. Further examples are given in the profiles for individual countries and regions later in this report.

UK and Indian science ministers agree to take partnership to new level

The Science and Innovation Network in India supported the UK Minister for Universities and Science, David Willetts on his visit to India in July 2010. David Willetts met former Indian Science Minister, Prithviraj Chavan, to discuss the central role that science and research will play in the enhanced partnership between the two countries. They agreed that the UK's and India's researchers would work more closely together in the future and highlighted the important role that collaboration in science and research has to play in economic recovery and growth. In this context the two Ministers finalised agreement on two new UK-India joint research programmes.

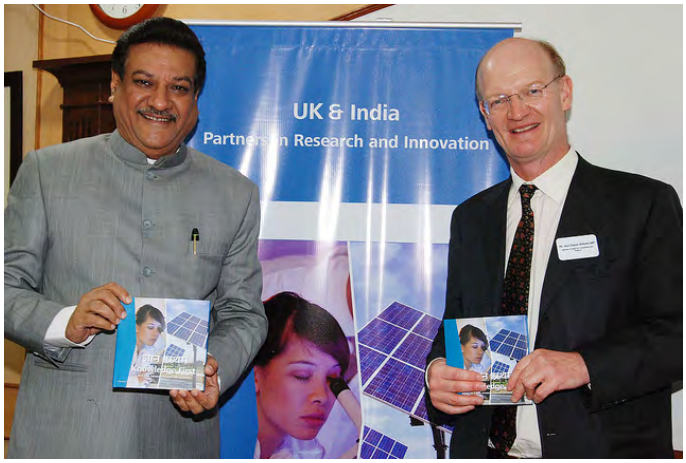


Figure 7. Minister for Universities and Science, David Willetts, and former Indian Minister for Science, Prithviraj Chavan, with the 'Knowledge First: Partners in Research & Innovation' booklet in New Delhi.

Science policy seminars in China

Over the last two years SIN China has been working with Science News of the Chinese Academy of Sciences to run four science policy seminars. These have attracted senior officials and experts in technology transfer, health, GM foods and urban planning to discuss key issues and debate how scientific evidence should be used to determine policy decision making. The seminars have been reported widely in Chinese media, contributing to China's understanding of the UK and promotion of the UK as a science partner of choice.

Royal Society activities in Malaysia

SIN Malaysia assisted the Royal Society with activities in Malaysia during 2010. The Royal Society conducted the first 'Atlas of Islamic-World Science and Innovation' study in Malaysia and leads the Southeast Asia Rainforest Programme looking at the stability of altered forest ecosystems and biological and physical impacts of forest clearance for oil palm plantation. The Royal Society also spoke at the Institute of Diplomacy & Foreign Relations on UK science and its role in diplomacy and international policy making.

Figure 8. Robert Culshaw from the British Antarctic Survey with High Commissioner Dr Andrew Pocock. Ottawa, February 2011

Celebrating Polar Differences

In February 2011, SIN Canada, in collaboration with the British Council Canada (among others), participated in a week of activities on the theme "Poles Apart", exploring similarities and differences between the two polar regions, organised within the context of Ottawa's annual Winterlude celebration. SIN helped bring in a British Antarctic Survey representative (Robert Culshaw) who spoke at several venues. The events included a public exhibit of photos of the Arctic and the Antarctic, a film festival (where SIN supported screening of the British Film Institutes film "The Great White Silence"), a public panel discussion, and discussions with local High School students, among others. In addition to the themed events, the SIN team worked with our Foreign Policy counterparts to setup a series of high level meetings between Mr Culshaw and Canadian government officials to discuss polar related matters.

Policy development on clinical trials for anti-cancer drugs

In May 2010, the Tokyo S&I team hosted a symposium inviting experts from the UK, Japan, South Korea and the US to review strategies for evaluating experimental anti-cancer drugs in clinical trials including regulatory, administrative, cost and drug-lag issues. A draft white paper was drawn up and shared with MPs at the Japanese Parliament. The final version will be published in a medical journal. In addition, a working group led by the Health and Global Policy Institute will be established to expedite academic/institutional investigator-initiated clinical trials. A major Japanese pharmaceutical company is in discussion with Cancer Research UK about developing a programme for collaboration.

Focal point programme: science policy cooperation between the UK and Korea

In November 2010, the Department for Business, Innovation & Skills (BIS) and the Korean Ministries of Education, Science & Technology (MEST) set on new plans for research networking. The research areas covered include polar technologies, food safety, life sciences, energy and mathematics. The British Embassy and MEST run a MEST/Chevening 2-year scholarship programme for up to ten Korean civil servants working in science policy areas to update their science skills through postgraduate studies in the UK.

European Innovation Partnerships

SIN Germany and SIN Sweden organised this one day workshop in Berlin, attended by the EU Commission and Belgian Presidency, to inform and influence discussions on the European Innovation Partnership (EIP) proposal ahead of the Competitiveness and European Councils. Chaired by Kenan Poleo, SIN Regional Manager for Central and East Europe, innovation policy leaders and national innovation plan owners from the 8 most innovative European countries were invited to discuss opportunities and challenges in establishing transnational innovation platforms through a pilot EIP on Active and Healthy Ageing.

A report was produced that consolidated both Member State and the Commission thinking on the evolving proposal, meaning key details and potential blockages could be worked through. The EIP pilot was agreed by Ministers at the December European Council.

Figure 9. Delegates at the innovation workshop in Berlin organised by SIN Germany & SIN Sweden

"EIPs will focus on bringing social policy problems and business solutions together and will learn from public-private partnership, centres of excellence and other models to create the best interaction possible between the science, the real-world solutions and the finance needed to kick these off."

- HM Ambassador to Sweden, Andrew Mitchell (October 2010)

Working with Parliament

The Science and Innovation Network supports the international work of Parliamentary Committees, using its unique combination of knowledge, location and contacts. Officers from the network regularly contribute articles to the Journal of the Parliamentary and Scientific Committee, *Science in Parliament*.

Science & Technology Select Committee visits to Europe

The House of Commons Science & Technology Select Committee, chaired by Andrew Miller MP, visited CERN in February 2011 as part of the Astronomy & Particle Physics inquiry; the visit was partly organised by the SIN team in Berne, Switzerland. The Committee published their report on 'Astronomy and Particle Physics' in May.

In December 2010, the same committee visited Berlin as part of their inquiry into the UK Technology Innovation Centres (TICs). SIN facilitated a programme of visits and discussions with representatives from applied research institutes, collaborative innovation centres, innovation facilitators and research organisations in Germany. The Committee gained an insight into different forms of innovation partnership in Germany, including Fraunhofer, Leibniz and Rolls-Royce University Technology Centres.

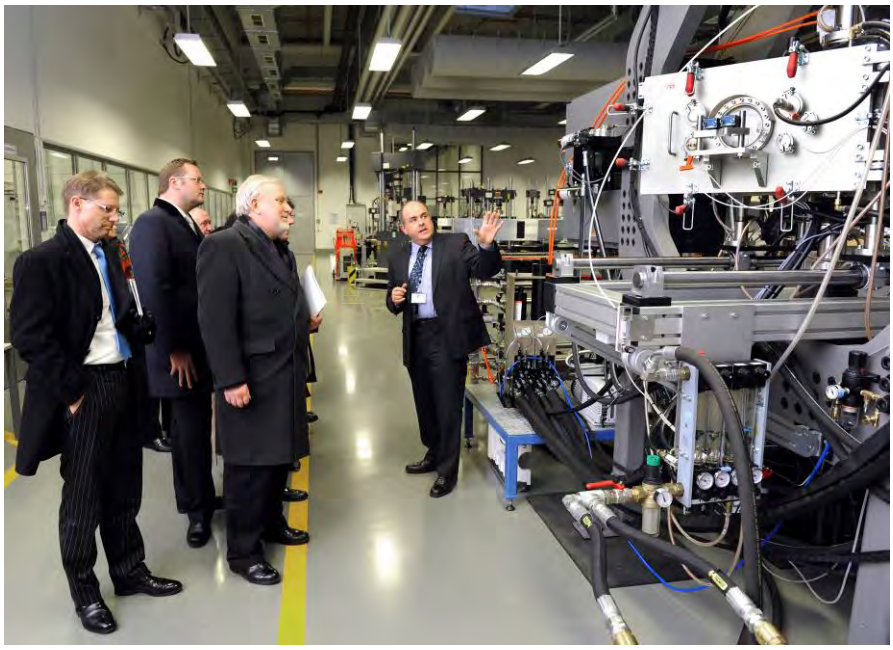


Figure 10: Members of the House of Commons, Science & Technology Select Committee to Germany visiting Rolls-Royce in Germany as part of their enquiry in the the UK Technology Innovation Centres

The visit programme enabled the committee to understand Germany's innovation landscape and the wider context in which Fraunhofer operates, i.e. alongside universities, basic research organisations such as Max Planck and Helmholtz centres and Leibniz institutes spanning strategic to applied research. The Committee were able to discuss innovation with representatives from research, industry and finance providers.

Joint work with US congressional committee on Geoengineering

SIN US led a first-of-its-kind collaboration between UK and US parliamentary/congressional scrutiny committees. The House of Commons Select Committee on Science and Technology and US House of Representatives Committee on Science and Technology completed a joint study on geoengineering. This marked the first time the two legislative bodies have worked jointly on a study. Regarding this work, Phil Willis MP said "What better subject than geoengineering for this – where international collaboration is essential if we are to explore and understand fully its potential".

Figure 11: Houses of Parliament (photo: Lara Phillips)

Country and Region Profiles

Brazil

For a profile of Brazil with facts and figures including economic trends and commercial relations with the UK, click here.

Science and Technology is a priority for the new Brazilian government, and in 2010, government spending in this area reached a budget of £15bn, the equivalent of 1.25% of GDP. Aloisio Mercadante, Minister for Science and Technology, has a challenging goal of achieving 2% of Brazil's GDP dedicated to science in the next 10 years, with innovation and development of capability a priority. Although the science budget for the Ministry suffered a cut this year, Brazil foresees a heavy investment from the private sector on R&D. Petrobras (a semi-public multinational gas & oil company) will invest £600m in R&D and the country expects to receive £37bn in international investments in 2011.

Brazil is increasingly being considered important by key UK stakeholders, as one of the "BRIC" countries (others being Russia, India and China). For example the report *New geography of science*[3] argued that "Brazil's profile, improving excellence, size and interface with the rest of the international research base make it an essential partner in any future international research portfolio... Brazil has a population of 190 million and its spend on research and development in 2007 was US$13 billion, about 1 per cent of gross domestic product - well ahead of many European nations."

Brazil has achieved 2.7% of global scientific production, representing a doubling between 2000 and 2009. In the same period the number of publications increased 205%, reaching 32,000 indexed articles. Brazil has overtaken Russia and the Netherlands in terms of research production, and is now the world's 13th largest producer of publications[4].

The UK is regarded as a partner of choice, especially in the area of innovation and scientific standards. The UK now co-authors more than 900 papers with Brazil (up from 400 in 1999), meaning that the UK has more scientific collaboration with Brazil than India (about 800 papers a year)[5]. The UK overtook France in 2008 to become Brazil's largest partner in science after the US. In terms of quality, the UK impact gain when producing a joint article working with Brazil is of 1.3, which compares very favourably with the impact gain obtained from co-authorship with India (1.01) and China (1.07). The Brazilian impact gain when working with the UK increases by a factor of nearly 3, significantly higher than the impact gain obtained when working with any other country.

[3] Demos & Evidence Ltd (2006)
[4] National Science Indicators (NSI)/Thomson Reuters Web of Science 2008/ MCT (Ministry of Science and Technology)
[5] Thomson Reuters (2009)

Achievements of the Science and Innovation Network in Brazil

Tropical Medicine Workshop

An area of mutual scientific strength, for both the UK and Brazil, offering opportunities for scientific collaboration is tropical medicine and parasitology. Brazil is responsible for over 18.4% of the world's scientific output in tropical medicine and 12.3% of the world's scientific output in parasitology, while the UK is home to over half of the world's ten most cited malaria researchers[6]. Complementary strengths in these areas present a potential opportunity for partnerships between the UK and Brazil that would increase the scientific impact of such work and provide significant health and economic benefits. SIN, the Sao Paulo State Research Funding Agency (FAPESP) and the Academy of Medical Sciences organized a joint workshop in tropical medicine and parasitology to explore research collaboration between the UK and Brazil. The workshop consisted of two days of discussions between senior investigators from Brazil and 9 UK researchers and extra meetings with key universities and funding agencies.

UK - Latin American Embryonic Stem Cells Course

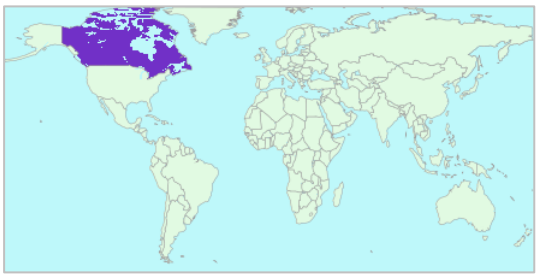
The "Embryonic Stem Cells as a Model System for Embryonic Development" is a series of activities lead by the main UK stem cells institutes, the MRC Centre for Regenerative Medicine, University of Edinburgh and the Wellcome Trust Centre for Stem Cell Research, University of Cambridge. The 2011 event was hosted in Mexico, mainly funded by SIN and organised in partnership with UNAM – Universidad Autonoma de Mexico. The aim of this initiative is to offer young scientists in Latin America access to cutting edge stem cell technologies to apply to their research programs by meeting the world's leading stem cell biologists in an informal environment. The initiative also involves a public engagement event and a symposium to raise awareness of breakthroughs in stem cell research. Meetings with Latin American Research Councils were organised including the Brazilian National Research Council, Argentinean Science Minister and the Mexican Research Council to discuss possibilities of establishing a fellowship programmes for students that took part of the course.

The Royal Society Frontiers of Science in Brazil

As part of its 350th Anniversary Celebration, the Royal Society brought the Frontiers of Science Event to Brazil for the first time. The event took place in Itatiba, São Paulo in August and was organised and co-funded in collaboration with FAPESP (State of São Paulo Research Foundation) and the Brazilian Academy of Science. There were 78 scientists from Brazil, the UK and Chile, and issues such as bio fuels, planet formation, brain plasticity and global climate change were discussed. This aimed to enhance collaborative research between UK, Brazil and Chile. The event was well covered by local press and an exclusive interview with the then Royal Society President Martin Rees had major national coverage in Epoca magazine. The SIN team co-funded the initiative and worked with the Royal Society from the beginning to identify the ideal partner to host the event.

[6] Thomson Reuters: Global Research Report

Canada



For a profile of Canada with facts and figures including economic trends and commercial relations with the UK, click here.

Canada is a significant force in global research and development (R&D), punching well above its weight in most key indicators of progress in science and innovation. Despite a steady decline in gross expenditure on R&D as a fraction of GDP, since 2004, to 1.84% (compared to the OECD average of 2.35% and G8 average of 2.08%[7]), Canadian outputs have consistently been well above the OECD average[8].

The guiding policy framework for Canada's science and innovation strategy remains the 2007 Mobilizing Science and Technology to Canada's Advantage, and a progress report was released in 2009[9]. The 2011 federal budget announced a range of investments in R&D, including CAD870 M in climate change and air quality, CAD141 M in basic research, CAD100 M in brain research and CAD100 M in digital media[10], and these are expected to remain unchanged when the budget is resubmitted following the fall of the government.

Canada's R&D strategy is based around four key priorities and thirteen sub-priorities[11], and its internationally-recognised strengths follow those themes:

- Environmental science and technologies
- Natural resources and energy
- Health and related life sciences and technologies
- Information and communications technologies

In terms of scientific output, clinical medicine and biomedical research generate more publications than all other fields combined. Other areas of Canadian strength not included in the government's strategy are aerospace, nanotechnology and particle physics.

With a broad overlap in R&D strengths, a shared language and a long history of cooperation, there is excellent potential for British influence and collaborative work in Canada. In particular, UK expertise in clean technology, aerospace, information & communications technology and health science could complement Canadian research priorities and investments well.

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[7] UNESCO (2010) Science Report: Canada
[8] OECD (2010) Science, Technology and Industry Outlook 2010: Canada
[9] http://science.gc.ca/Home/Science_and_Technology_Publications-WSF8448F28-1_En.htm
[10] http://www.budget.gc.ca/2011/glance-apercu/brief-bref-eng.hmtl
[11] Science, Technology and Innovation Council (2008) State of the Nation

Figure 12. Science quiz night at the British High Commission in Ottawa

The key outcomes detailed below exemplify SIN Canada's professional abilities and good standing in the scientific, policy and business communities. They are seen as a bright, energetic and highly competent organisation, and have access to staff at the higher levels of academia and industry. Our representational work includes wide use of new media and networking, and includes Science Salons, and a Science Quiz Night hosted at the British High Commission in Ottawa.

Achievements of the Science and Innovation Network in Canada

Collaboration in Knowledge Mobilisation (K*)[12]

In 2010-2011, SIN Canada participated in 2 events aimed at defining the role of the knowledge intermediaries, and in sharing best practise within the field. The role of K*, or the knowledge intermediary, is to create communication bridges between researchers and end users (the general public, the government, or a special interest group). The SIN Canada Team brought a UK expert in K* to present at a special Workshop on Knowledge Translation & Knowledge Brokering that happened in collaboration with the Canadian Science Policy Conference in October of 2010 (see additional blog here). This was followed-up by a request to include a Canadian participant in a UK workshop. The links created through these events has led to a proposal for an International K* conference to be held in Canada, as well as several follow-up discussions/workshops between UK stakeholders and Canadian Federal & Provincial governments on K* best practice.

Grand Challenges in Gut Health

Figure 13. Participants at a meeting on gut health, organised in collaboration with SIN Canada.

A meeting to identify 'Grand Challenges' in Gut Health, between Canadian and UK researchers was organised in collaboration with SIN Canada, in 2009. The meeting involved representatives from the Institute for Food Research (IFR), the University of East-Anglia, the Advanced Food and Materials Network (AFMnet), Agriculture and Agri-food Canada, Health Canada, among others, and worked to identify areas of complimentarity between research groups and facilities between the two countries. There are now several ongoing collaborations following this event, and a second event is being planned for 2012 looking at Canada, UK, EU partnerships.

[12] K* refers to the fact that this particular field is known as several things: knowledge translation, knowledge mobilisation, knowledge brokering, among others, and are now being referred to collectively as K* (Kstar)

Secure Data Laboratory

In December 2010 S&I Canada supported the visit from the Institute of Crime Science at University College London (UCL) to the School of Criminology at Simon Fraser University (SFU) in Vancouver. SFU currently has a unique setup for secure data storage and computing that UCL seeks to replicate and adopt, and the 1-week meeting revolved around technical discussions and best practice sharing to provide UCL with necessary information toward the setup of a secure data laboratory. The initiative is well under way and actively pursuing a follow-up visit/summit to be held possibly in London to take the project to the next step.

Figure 14. Discussion of potential collaborations in researching HIV-AIDS

HIV-AIDS workshop

SIN Canada in collaboration with the University of British Columbia (UBC) and University College London (UCL) organised a two-day workshop in February 2011. About 25 researchers and physicians from UCL and UBC gathered in Vancouver to discuss advances in their research areas and opportunities for collaborative work. Participants identified areas of overlap as the two institutions complement one another's expertise in several areas (e.g. HIV co-morbidity studies, laboratory research, clinical trials, biostatistics and modelling), and specific links between researchers for future collaboration in these areas were forged during the course of the workshop.

Renewable Energy Collaborations

SIN Canada organized a 3-day visit in Newfoundland to learn about innovative research and talk about the Ocean Renewable Energy Technology Fund (ORETF). Visitors from the UK delegation included UKTI, University of Plymouth, British Consulate General of Toronto and the Science and Innovation Network. Visits built knowledge on ocean research, marine energy technologies and environmental strategies. Moncton University, Newfoundland governmental departments, National Research Centre, and businesses were part of the visit program. The Newfoundland visit was a follow up on the initial 2-day visit by Prof Wheeler to Calgary in August 2010 – SIN Canada in collaboration with BTO Calgary helped organise and accompanied Dr Wheeler in a series of high-level meetings with Oil & Gas companies (Nexen, Shell, Talisman, Suncor) and research institutes (AB Innovates, UCalgary) to probe their interest in partnering up toward the constitution of a Canada-UK Technology Accelerator Fund for ocean renewable energy.

China

For a profile of China with facts and figures including economic trends and commercial relations with the UK, click here.

China is the world's second largest economy, and the approach it takes to tackling the challenges that come with growth will have global impact. In 2009, China's greenhouse gas emissions rose by well over the UK's total. Engaging with China on these issues will be essential to global sustainability as well as bringing wider benefits to research in both countries.

In research, China is world number two in publications and across broad research areas now has more top-three places by citation than France or Japan. It is home to the world's largest pool of researchers and world-leading facilities. Annual R&D spend, at 1.8% of GDP, is planned to rise by a further 70% or so in cash terms by 2015 to reach 2.2% of GDP. The UK is China's third-largest science partner, building on rapidly growing collaboration over the last decade.

China's research landscape is complex. It has more than the UK's share of the world's top 1% research papers in Physics, Chemistry, Mathematics, Engineering and Materials Science. The Chinese government recognises there are issues relating to research quality at the lower end of the spectrum, and has major investment and programmes under way to address this. Choosing the right collaborative partner in China remains key.

Collaboration can produce significant impact gains to both countries - 12% of cited UK-China papers are cited four times above the world average, compared with 8% for UK-only and 7% for China-only papers. But co-operation also yields a higher share of uncited papers than for the UK alone. To address these issues a key SIN role is to help UK researchers partner with the best Chinese groups, as well as helping groups access funding opportunities from across China.

China's innovation capacity is also rising fast. Although on average still 55% below the EU, it is closing the gap. China is catching up Europe particularly quickly in international patenting, research co-operation and knowledge intensive services. In 2006-08, China produced more alternative energy innovations than any other country, becoming the world's third largest innovator in non-fossil fuels. Collaboration is growing strongly and SIN-China works with Chinese partners across a wide range of areas.

Intellectual property management and market access remain an issue for UK investors and innovators. The World Bank ranks China 79th in the world for the ease of doing business, down one place from 2010.

Another key SIN China role is therefore to improve the framework for innovation co-operation, by promoting and sharing best practice, bring potential partners together and influencing policies towards more open collaboration and innovation. Projects have a growing focus on research commercialisation and the Innovation Dialogue helps to build understanding of our innovation systems and improve them. SIN China also works closely with UKTI to promote UK science and innovation, share intelligence and develop economic opportunities.

SIN also engages with China on global challenges. The UK collaborates with China on developing and applying research on climate change, the environment, infectious diseases and food security. The UK Foresight programme and co-operation in food security are also influential in engaging policy- and decision- makers.

Achievements of the Science and Innovation Network in China

Nuclear waste safety

SIN funded UK expert attendance at two conferences dealing with Nuclear waste safety, practice and education. As a result the UK is now at the forefront of an EU FP7 bid for collaboration on Nuclear waste research in China. Additionally, the UK team has been able to develop contacts in the Chinese nuclear industry and have been promoting opportunities for China to invest in the UK research programme, (Dalton institute) and with commercial operators.

Nanotechnology and Materials

Together with the BIS nanotechnology Focal Point, SIN China has maintained an active UK-China nanotechnology and materials programme over the past year. Specific projects have included advanced processing of materials, nanotechnologies for water treatment, energy storage and excellence mapping. The programme has laid the foundation for several UK-China collaborative research projects and partnerships. 2011 will see the programme move to its joint proposal drafting stage, with a focus on healthcare, water treatment and carbon materials (e.g. graphene).

"SIN China has been instrumental in ensuring that the UK-China nanotech and materials programme is an ongoing success. Many of the projects would simply not have been possible without their in-country support, institutional access and local knowledge"
- Professor Xiao Guo

Assessing the risks and benefits of GM crops

A sequence of two SIN-China workshops has led to a UK/China collaborative agreement and a significant UK/China research proposal to develop a risk/benefit tool to assess the environmental and economic value of GM crops in poor rural areas. This has been submitted to the UK's Ecosystem Services and Poverty Alleviation research fund for approval and a decision is expected in the Autumn of 2011.

Space Science workshops

Six bilateral workshops have built strong relations between top UK and Chinese experts and institutions. A virtual 'Sino-UK Joint Space Science and Technology Laboratory' is now in place. Significant opportunities have been identified in planetary exploration, earth observation, climate change and scientific instrumentation. SIN China has played a key role in pushing forward SSTLs £112 million follow-on project to Beijing-1 satellite with BLMIT and its contribution to the international charter on major disasters, helping monitor pollution, biodiversity, agriculture & climate change impacts. An agreement was recently signed at the UK/China Summit, witnessed by the Prime Minister and Premier Wen.

"SIN China fostered our interactions with Chinese researchers, which resulted in a fruitful scientific exchange focused on human embryonic stem cells"

- Sir Ian Wilmut, Director of the MRC Centre for Regenerative Medicine

Forging innovative collaborations

SIN China worked with Innovation China UK to organise outward missions to provide universities and companies the opportunity to forge innovative collaborations with Chinese organisations. Two technology partnering events were very successful in raising the profile of UK pharma and agri-tech technologies/companies in China, with six UK partners pursuing commercialisation deals. A knowledge transfer event was very successful in promoting UK expertise both at national and regional level, detailing policies and support for UK innovation.

Bio-diversity and climate change

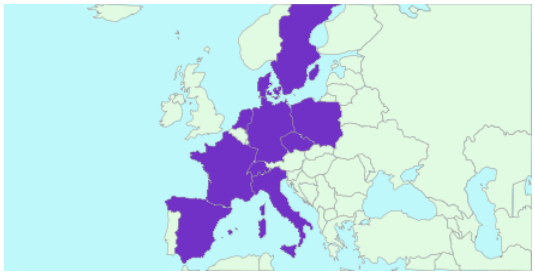
SIN China funded an outward mission from the National History Museum to work with the Chinese Academy of Sciences institute in Guilin to further link research collaboration on how different types of bio-diversity have survived climate changes in the past and can be adapted to assist the food security agenda. As a result there are now two joint research projects between the institutions and a mutual training programme is being established.

Secretary of State's keynote speech on science, innovation & business growth

SIN China contributed to Dr Cable's first visit to Beijing during November 2010 Prime Ministerial Summit to promote British interests. Dr Cable gave a keynote speech on science innovation and business growth, highlighted the UK's MRC Technology partnership on pharmaceutical research, UK plans to promote technology-based innovation and announced a £2.45m joint investment project between Research Councils UK Energy Programme and the Chinese Academy of Sciences on solar energy and fuel cells. The Energy Programme portfolio with China now stands at approximately £20M.

Figure 15. Vince Cable speaks during his November 2010 visit to China

Europe



For a profile of the countries in Europe with facts and figures including economic trends and commercial relations with the UK, click here.

Europe is a significant player in terms of world R&D: 25% of global R&D takes place in Europe, producing around 33% of global scientific publications and citations. However only a small proportion of all R&D undertaken in Europe is subject to any transnational coordination (only 6% through Framework Programmes) with the majority of public research financed through 27 national systems. SIN has a role to play in exploiting opportunities where UK interests and other national interests align. We do this either bilaterally or multilaterally with interested European partners.

SIN has a presence in ten European countries and is able to access a further six through a flexible use of resource. Changes underway include expansion into Finland and into Turkey. Taken together these countries present a highly diverse landscape, from the large G8 economies with great influence in European policy making and broad science bases; from small innovative countries with particular niche strengths; to emerging economies investing heavily in science through EU structural funds.

The current diversity in Europe is a real opportunity for the UK. We can usefully engage with Europe's broad capabilities across the whole spectrum of science subjects, as well as different specialist areas and differing perspectives in different member states to deliver strong collaboration outcomes for the UK. We can undertake excellent collaboration, develop solutions to global challenges, exchange good practice in science and innovation policy making, and exploit commercialisation opportunities.

A key role exists for the UK in shaping the development of a strong, competitive and innovative knowledge based economy in Europe through the European Research Area. The Common Strategic Framework, the eighth Framework Programme, the EU 2020 Innovation Union, European Innovation Partnerships, Joint Programming Initiatives, KICs and other EU instruments provide context and enhanced opportunities for our work in science and innovation collaboration and policy exchange.

SIN Europe works as one team, pooling information, resources and ideas and working multilaterally in Europe whenever it makes sense to do so for UK stakeholders. Thematic areas for collaboration work have been chosen which match UK priorities to the strengths and opportunities we have identified in each of our countries. Current priorities are:

- Low carbon energy
- Security infrastructure and resilience
- Design and the creative industries
- Health
- Food and agriculture
- Environment & sustainable development

Profiles of individual countries in which SIN Europe has a presence

CZECH REPUBLIC

The Czech Republic has 1.55% GERD (£1.5bn), and 47.729 R&D employees (FTE) in the public and private sectors, 300,000 university students and 23,400 PhDs. Over £5bn of EU R&D Structural and Cohesion Funds will be invested into science and innovation infrastructure in 2008-15. It is home to large infrastructures including the Tokamak Compass D and the European Light Infrastructure (ELI). New innovation parks and incubators are being built near universities. Key strengths are: biomedicine (regenerative medicine, DNA, stem cells); nanotechnology/ICT; nuclear power; mathematical modelling; bioinformatics; and PC games.

DENMARK

Denmark spent more than 3% of GDP on R&D in 2010 with more than 2% coming from private R&D. Private R&D is forecasted to reach 2.31% in 2011. Recently the government has passed legislation that cuts public research and education by £450 million in the coming years and strategic research will become more commercially oriented. The government is focusing on green research and innovation in the future, building on its existing strength in wind power, clean-tech, and transport. Denmark was the first country together with Britain to support the 30% CO2 reduction target for EU in 2020 and Denmark has the stated goal of being independent of fossil fuels by 2050. Denmark has been ranked second out of 31 European countries in the Innovation Union Scoreboard 2010. Danish universities have the highest impact and visibility in the Nordic region according to a report from Nordforsk. Denmark is second best globally in 'green IT' according to a new report from Global e-Sustainability Initiative (GeSI).

FRANCE

France is both a key partner and competitor to the UK, second only to Germany in the 2009 European Industrial R&D scoreboard. In 2008, France spent 2.11% of GDP on R&D. France is home to the world's largest multidisciplinary research agency, CNRS, and agronomic research agency, INRA. It also hosts international agencies such as ITER, ESA and the OECD. Recent reforms to the research system have seen massive investment in R&D: the Future Investments Programme allocates €21bn to HE and Research to upgrade universities and science facilities, improve technology transfer agencies and university-hospitals and create thematic technology research institutes, and and a huge S&T campus at Saclay. Generous R&D tax credits have also recently buoyed industrial R&D. The National Strategy for Research and Innovation (2009-2014) prioritises health and biotechnology, environmental sustainability and eco-technologies and ICT & Nanotechnology. France's research strengths include mathematics, modelling, agronomy and nuclear. Industrial strengths include pharmaceuticals, automobile, aerospace and electricity.

GERMANY

Germany is the biggest net contributor to the EU budget and 2nd on R&D funding as a proportion of GDP among G8 (8th world-wide). Germany is 3rd worldwide behind the US and the UK in terms of world citations general. It is also 2nd world wide in physics and engineering. Expenditure for education, higher education, science, and R&D was EUR 215.3bn in 2008 (8.6% of GDP). The German Federal Government is committed to increasing this to 10% by 2015, which will also mean an increase of gross domestic R&D expenditure from 2.6% to 3%. Its clusters of excellence, located especially in the South, are built around excellent university research, non-university R&D (basic and applied) and industrial R&D. It has a strong influence on various EU research programmes and institutions. Germany's main strengths are in the automotive, production and chemical engineering, ITC, and nanotechnology. Industrial biotech is a fast growing sector. Cleantech made in Germany is already leading in Europe.

ITALY

Italy is known for its cutting-edge innovation in fashion and design, and R&D investment in areas such as energy, aerospace, robotics, physics, ICT, life sciences, agrifood, cultural heritage conservation and nanotechnologies. In this area, Italy is second in terms of funds received through FP7, retaining fourth position in the other three thematic areas. Italy hosts Elettra Synchrotron Light Laboratory, and is building the SuperB Factory, a major international research centre for fundamental and applied physics, which involves the construction of a large underground electron-positron collider. Italian researchers score quite high in terms of publications per capita and of impact (according to a OECD survey, Italy ranks before the US). Nearly 40% of Italy's scientific publications are developed through international collaborations (particularly with the US and the UK), and in 2009 Italian researchers were first for number of approved projects in the European Research Council Starting Grants. Innovation by design has led to incredible growth for business.

NETHERLANDS

The Netherlands ranks 8th in the Global Competitiveness Index, and is a key business and research partner to the UK It spent about € 10.4 billion on R&D in 2009 (1.8% GDP). The business sector accounts for almost 60% of R&D spending, including multinationals such as Shell, Unilever, DSM, AkzoNobel, Philips, ASML and Océ which each invest over EUR 100m/year in R&D Government investment and links between the academia and industry ensure an excellent innovation infrastructure. The Netherlands is among the world's top nations in terms of research publication output per capita and applications for international patents. The citation impact score of 1.33 places the Netherlands in the top 5 worldwide in terms of scientific impact. There is a high share of international co-publications at 48% of total publication output (2005 – 2008). The Dutch Government recently launched new strategy for nine Top Economic Areas: AgroFood, Horticulture, High Tech, Energy, Logistics, Creative Industry, Life Sciences, Chemistry and Water.

POLAND

Poland has a large population of young skilled researchers and one of the highest scholarisation indexes in Europe (51%). It has a current inflow of €67 bn from European Structural & Cohesion funds being invested in new infrastructure, research facilities, training and innovation processes. Developed research strengths areas are: specialised technological equipment, research and measurement devices, construction materials including nanomaterials, nanotechnologies, space, energy saving materials, renewable and alternative energy sources, nuclear energy, information systems, networks and data transmission, and engineering of IT products.

SPAIN

Spain represents more than 2.1% of the world's total GDP and has enjoyed a 14-year period of economic growth above the 3% mark. Spain is fast developing expertise in: aerospace; renewable energies; water treatment; rail; biotechnology; industrial machinery and civil engineering. It is the 7th most attractive country in the world for investment. Spanish R&D expenditure grew from 0.9 % GDP in 2000 to 1.35 % GDP in 2008, (both public and private). Spain is 9th in the world in terms of scientific production (45,000 publications), representing 3.25 % of the total. Spanish scientific production is above Western European Countries average in areas such as: agricultural sciences; biology; computation science; chemistry; chemical engineering; environmental sciences; mathematics; immunology and microbiology.

SWEDEN

Sweden contributes the highest Business Expenditure on R&D (BERD) figure of any EU country at 2.93% (and a further 1% GDP from public sources). Sweden was top of the EU Innovation Scoreboard in 2009. Swedish researchers surpass the world average in 19 out of 21 fields studied in terms of citation impact (Thomson Reuters). Sweden has the highest number of publications relative to public expenditure on R&D in the world. There is a strong industrial and research base in engineering (including environment technologies), transport, telecommunications, electronics, biotechnology and pharmaceuticals. Strong links between academia and industry, and state owned companies where public procurement has been used to develop technologies in the past have been the keys to Sweden's success.

SWITZERLAND

Swiss R&D is of high quality and internationally oriented with a high percentage of foreign scientists and students. Switzerland can generally be found among the top 3 in international research and innovation rankings. Switzerland gets the best return on investment from FP7 participation. Of the 22 OECD countries, the largest number of patents per capita is held by Switzerland with 295 per million. Strong research areas are in biotech, sustainable energy sources, micro- and nanotechnology in ICT, materials, healthcare, transport systems and space. Among the upcoming fast growing sectors are medical technology, clean tech, smart materials and food technology. In the 2009 Innovation Scoreboard, Switzerland has the highest level of innovation performance and its rate of improvement is above the EU27.

Achievements of the Science & Innovation Network in Europe

Royal Visits Support Science

HRH the Prince of Wales met with Czech university students and received the prestigious 'Great Gold Medal' on his visit to Masaryk University in March 2010. The medal was awarded at the university campus in Brno-Bohunice, where Prince Charles also engaged in lively discussion of environmental protection issues with students. The Royal visit raised awareness of the sustainable development and grand science challenges in the 21st Century. The presentations and discussion with students received widespread publicity.

In March 2011, HRH the Prince of Wales joined the UK/Spain Workshop on Algae Biofuels. The workshop was organised by SIN Spain, in collaboration with the UK Biosciences Knowledge Transfer Network, the Spanish Biomass Platform and Repsol, Spain's biggest oil company. Accompanied by the Prince of Asturias, the President of Repsol and the Spanish Secretary of State for Science and Innovation, HRH joined the poster session at the workshop. Feedback from the workshop has been excellent and a number of synergies and opportunities for collaboration have been identified.

Figure 16. HRH Prince Charles discusses the environment with students from Masaryk University, Czech Republic.

UK company awarded Czech science audit contract

Thanks to SIN Prague's involvement in innovation and IPR support and recommendation to bring Erik Arnold from Technopolis Ltd. to speak at the Czech EU Presidency Conference Eufordia in 2008, Technopolis was awarded a Czech science audit contract worth over £1.2m in 2010. The audit is to compare the level of Czech science and research with the rest of Europe. The audit results should serve as ground material for the planned reform of science and research and for updating the National Policy of Research, Development and Innovation for 2009-2015 with the aim of increasing the efficacy of public financial support for science.

Biomass collaboration

A second generation biomass gasification event in 2010 in Sweden has inspired collaboration. Volvo, INEOS, EON, and a number of universities including Chalmers and Imperial and UK policy leads participated. Follow-up activities included academic exchanges, and an application from the University of Umea, together with the UK Centre for Low Carbon Futures (York, Hull, Leeds and Sheffield) getting through the first round for Framework Programme 7 (€5m). The UK Department of Transport discussed biomass grid injection with technical experts and the Swedish Government and UK policy changes have been taken through. New UK proposals for gasification plants for aviation and vehicular fuel include INEOS, Air Products, and British Airways

"Illuminating, the perfect opportunity for collaboration between the two countries... It's a real benefit to the general public, helping to improve overall quality of life."
- Dr Bernie Rickinson, CEO of Institute of Materials, Minerals and Mining

Designing out landfill

Jointly with the Materials and the Environmental Sustainability KTN, SIN Netherlands organised the UK Designing out Landfill Mission to the Netherlands. The varied programme brought together UK and Netherlands designers, materials technologists, waste experts and government representatives. One of the highlights was a showcase of sustainable products from the UK and the Netherlands demonstrating ideas that both countries can offer for sustainable design, showing that waste materials can be used for new high-value products.

Collaboration on CO_2 Capture

A workshop was held at the Technical University in Darmstadt and discussed state-of-the-art development of new technologies for carbon capture and storage. 30 Scientists from 6 countries presented and analysed their work at the workshop organised by SIN Germany & Denmark. Alan Haigh, Head of the EU Research Fund for Coal and Steel, rounded up priorities and opportunity areas as viewed from Brussels, urging scientists to initiate cooperation projects. It is likely that there will be follow up events in the future to consolidate research findings and build collaborative links.

Figure 17. Delegates at a workshop on Carbon Capture and Storage in Germany visiting a test site. November 2010

UK-Spanish Cancer research postdoctoral programme

Banco Santander Foundation and the Spanish National Oncology Centre (CNIO) signed an agreement to fund British scientists to spend two years at CNIO in Madrid, developing an ambitious research project as part of their postdoctoral training. This programme has been developed with the support of SIN Madrid, and aims to foster relationships and collaborative projects between CNIO and cancer research institutions in the UK. CNIO is one of the best cancer research centres in Spain, conducting basic and applied research.

Research collaboration between UK and Swiss institutes

In January, as a follow-up to a previous meeting, a delegation from STFC and UK researchers from Diamond, RAL, ASTeC and UCL visited the Paul Scherrer Institute (PSI) in Switzerland to discuss collaboration areas, facilitated by SIN Switzerland. The visit ended with promising plans for a MoU regarding collaboration in the areas of accelerators, detectors and exchange of science. Currently, clear collaboration agreements have been made between PSI and ASTeC which will be included in the draft MoU.

Green is the New Black: innovation in fashion

SIN Italy contributed to the success of the 2010 Queen's Birthday Party which focused around innovation. The SIN team identified "sustainable fashion" as an appropriate theme and selected a number of innovative designers to be showcased. The SIN team coordinated the overall organisation and supervised the set up of the exhibition managing to involve professional help in-kind from La Rinascente, one of the biggest Italian fashion stores. The exhibition was highly successful both in terms of attendance and press coverage.

Figure 18. Green is the New Black exhibition.

Influencing on Innovation in Poland

The British Embassy Warsaw's Science and Innovation Unit together with DemosEUROPA think tank and Ernst &Young's 'Better Government' Programme organised two meetings of the High Level Working Group on Innovation. The aim of it was to discuss policy measures that are used in Poland and the UK to create demand-side innovation and how to overcome major challenges, obstacles and trends related to innovation in the public sector. As a result, DemosEuropa published a report with a set of recommendations for the Polish government that was circulated to key innovation players in Poland.

David Willetts visits Berlin

The visit gave David Willetts first hand experience of how a Fraunhofer institute operates and informed his thinking about the UK's Technology Innovation Centres. David Willetts was given access to senior science & innovation contacts from Germany, representing large science, innovation, industry and universities. At a bilateral meeting the Minister agreed follow-up to explore collaborative opportunities in the area of space launch technology. Following his innovation visit, he attended the Königswinter Conference to discuss economic growth, social security and foreign policy issues in a bilateral Germany-UK context.

Figure 19. David Willetts visits the Fraunhofer Heinrich Hertz Institute (Photo: Jana Denzler Photography)

International Expert Forum on Food Waste organised by SIN Switzerland

35 experts from around the world discussed food waste reduction at the International Expert Forum on Food Waste, organised by SIN Switzerland and Foresight, and was opened by John Beddington. The report of the workshop results was integrated in the final report of Food and Farming Futures published by Foresight, used in the Foresight Synthesis Reports: "Reducing Waste" and an article published in Philosophical Transactions of The Royal Society.

Influencing German thinking about EU research policies

SIN Germany secured an opportunity for Sir Adrian Smith (Director General, Knowledge & Innovation in BIS) to speak at an international conference about the future of the European Research Area. He addressed 300+ senior representatives from higher education, research, science advisory bodies and policy making, including representatives from the Commission. Participation in the event and bilateral discussions about large science facilities in the margins provided an opportunity to reiterate the UK's principle that the European Research Area needed to create added value.

Figure 20. Sir Adrian Smith (BIS) with Ursula Roos (SIN Germany) and Marcus Besley (BIS) in Berlin. September 2010.

Franco-British workshop on chemicals from biomass

Following a Franco-British workshop organised by SIN France in Sept 2009, the partners have gone on to organise a series of further exchanges. The fourth workshop in the series was hosted by the University of York and key French partner cluster, Industries and AgroResources. A number of very successful outcomes can already be seen, including a major French cosmetic company investing in the University of York; French Engineering Schools ESCOM and Lasalle Beauvais have established student exchange programmes with the University of York; and the University of York is a partner in the successful PIVERT bid for EUR 250 million under the French Future Investments programme, to create a world class cluster in low carbon technologies near Compiegne (Picardy region).

Figure 21. The UK Ambassador to Sweden, welcomes Konstantin Novoselov.

Nobel Prizes - A great year for UK science

In 2010, four UK-based scientists received the Nobel Prize: Robert Edwards (for pioneering in vitro fertilisation), Christopher Pissarides (for work on the economics of unemployment), and Andre Geim and Konstantin Novoselov (for developing graphene). The S&I team in Sweden supported the Universities and Science Minister's visit to the Ceremony and the UK Ambassador hosted a lunch for UK prize winners. Edward's work on IVF captured the public's imagination. Manchester, Lancaster and Cambridge universities are now preparing a multi million pound bid to the European Commission Future Emerging Technologies Flagships with European partners.

"The Synthetic Biology Workshop was indeed a great success..."
- Birger Lindberg Møller, Director of UNIK Synthetic Biology Research Initiative

Synthetic Biology Workshop

This US-Denmark workshop was organised by 'Innovation Denmark' in partnership with the University of Copenhagen and University of California Berkeley, and hosted more than 120 participants, with about 30 invited talks by the leading researchers in Synthetic Biology worldwide. The S&I network secured 2 speaking slots for UK experts and sponsored a further 5 UK researchers to attend the event. Following the event there was a collaboration agreement between UK & Danish scientists.

Workshop on Nanosafety

SIN Paris co-hosted a European workshop on Potential Human Health and Environmental Issues associated with Nanotechnology. As a result, the Institute of Occupational Medicine (IOM) secured €9 million from the EU Commission to coordinate an FP7 project aimed at developing innovative reference methods for assessing the risk of engineered nanoparticles. Participants from the meeting contributed to the HMG report UK Nanotechnology Strategy, which tasks SIN to "help identify best practices and ensure that the UK is embedded in strong international nanotechnologies business collaborations". A follow-up event was organised by the French Embassy in London, which led to the creation of a Franco-British school on nanosafety, fully funded by CEA.

Trilateral workshop on in-vitro diagnostics

"The role and significance in-vitro diagnostics for the healthcare systems of the future" workshop was held in Berlin, jointly organised with the HealthTech and Medicines Knowledge Transfer Network, the French Embassy in Berlin and a local biotechnology cluster. The workshop attracted over 80 participants from business, research, regulatory and policy-making bodies and facilitated collaboration between the UK, France and Germany. Outcomes included business opportunities being created for over 80% of participants who provided feedback.

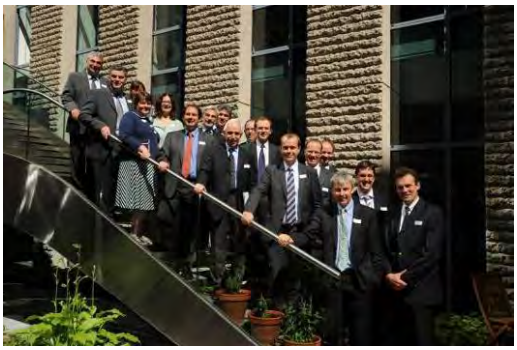
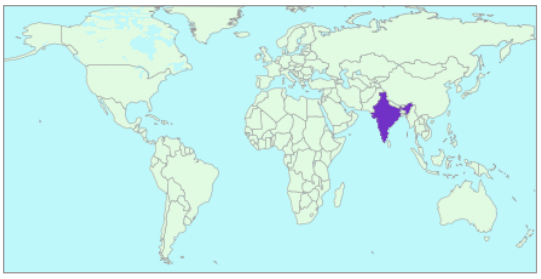


Figure 22: Participants at the workshop on in-vitro diagnostics in Berlin. June 2010.

Collaboration on new light sources

A series of workshops organised by SIN Italy led to a Memorandum of Understanding between the Diamond Light Source, STFC and the Italian Institute for Nuclear Physics whereby joint research projects will be funded to foster excellent scientific collaboration in Light sources between Italy and the UK. The MoU will be finalized this coming summer. The workshops also prepared the way for a School on Neutron Instrumentation to be held every two years to train young scientists.

India



For a profile of India with facts and figures including economic trends and commercial relations with the UK, click here.

India has recently been described as "consolidating its place at the high table of international science". This is an accurate picture of India today - one of the emerging scientific superpowers of the 21st century. Education, science and research are key pillars of the Coalition Government's new enhanced partnership with India and therefore the Science and Innovation Network's role is central to the future of the bilateral relationship.

India is currently ranked 7th in terms of global research output[13], and invests a little less than 1% of its GDP on R&D[14]. However, India has exceptionally ambitious plans for both the size and the quality of its research base. India's domestic output of scientific publications rose rapidly in the last decade (an 80% increase between 2000 and 2007)[15] to account for more that 3% of the global total. At that rate of growth India will overtake most G8 nations in the period 2015-2020. Investment in R&D is also rising quickly - budget estimates for the 11th Five Year Plan (2007-2012) indicate a tripling of the public budget for science and technology compared to the 2006 figure. There is a publicly stated policy to reach 2% of GDP and a long-term aspiration to reach 2.5% of GDP by 2020[16]. Given India's projected high growth rate for the decade ahead (and especially if adjusting for purchasing power), even reasonable progress towards these targets would propel India into the scientific premier league.

India and the UK are established partners for scientific collaboration. The evidence points to a rapidly growing collaborative research relationship1. With recent commitments, facilitated by SIN and RCUK, for jointly-funded and jointly-executed research initiatives between UK and Indian research funders totalling in excess of £60m, India is one of the UK's largest bilateral partners in terms of joint investment.

There is a strong policy driver in India to link the outputs of research to innovation outcomes, be they economic, environmental or societal. The private sector is responsible for both funding and performing an increasing percentage of R&D in India. India's triadic patents almost doubled over the last 20 years, with average growth of 20% since 2000. However, in absolute terms, India still registers few patents compared to its competitors.

[13] Thomson Reuters (2010) Bibliometric study of India's research output and international collaboration & UNESCO (2010) Science Report: the current status of science around the world
[14] Department of Science and Technology (2008) Research and Development Statistics at a Glance
[15] Thomson Reuters (2009) India: research and collaboration in the new geography of science
[16] Science Advisory Council to the Prime Minister (2010) India as a global leader in science

Achievements of the Science and Innovation Network in India

UK-India collaboration on Fuel Cells

SIN India jointly with the Research Council Office in India, worked closely with the Engineering and Physical Sciences Research Council (EPSRC) and Department of Science and Technology (DST) Centre for Fuel Cell Technology to bring together seven fuel cell technology researchers from the UK with 23 of their Indian counterparts. The workshop included scoping the potential areas for this joint collaboration and also included fuel cells research experts from Indian and UK industries. By mapping joint strengths onto existing gaps, delegates identified a list of research themes which helped shape the focus of the joint call for research proposals. Through a joint approach of call for proposals, joint peer review and final panel, EPSRC and DST selected four UK-India projects for funding.

Figure 23. David Willetts with the former Indian Science Minister, Kapil Sibal, at the signing of a Letter of Intent to launch a new initiative on Food Security. November 2010.

David Willetts visits India

SIN India supported the two visits of the Minister for Universities and Science, David Willets. In November, they arranged meetings for the Minister at centres of excellence and research institutes in Delhi, Bangalore and Pune. David Willetts joined the former Indian Science Minister, Kapil Sibal, in witnessing the signing of a Letter of Intent to launch a new initiative on Food security. Both sides agreed to establish a joint funding initiative to generate scientific knowledge that will underpin increased food security and poverty alleviation. This was followed by a joint call for proposals on sustainable crop production in January 2011.

Indo-UK Science and Innovation Council

On 13 February 2010, the second meeting of the Indo-UK Science and Innovation Council took place in New Delhi. Pat McFadden, former Minister for Business, Innovation and Skills, and John Beddington, the Government's Chief Scientific Adviser, led the UK delegation. Prithviraj Chavan, former Science and Technology Minister and Dr Ramasami (Head of Department of Science and Technology) led for India. The program achieved all UK objectives, including seven new agreements which underline how our science and innovation relationship addresses a range of cross-cutting UK international priorities. In addition, the Council agreed a number of practical measures to further deepen the bilateral relationship.

Prince Charles joins Golden Jubilee celebrations

Continuing SIN's celebration of the Indian Institutes of Technology (IIT)-Delhi's 50th Birthday, His Royal Highness the Prince of Wales attended a special reception at the British High Commission in October 2010. Prince Charles met a number of IIT Delhi scientists who are working on major projects with UK universities in areas of environmental importance. He learned about the UK-India Science Bridge on biofuels and spoke to a long serving member of IIT faculty about the strong links between IIT Delhi and UK institutions.

Figure 24. Prince Charles visits the Indian Institute of Technology in Delhi as part of their Golden Jubilee Celebrations

"It is not difficult to give top marks for all categories: the S&I team did a superb job … I give top marks and also express my gratitude."

– Prof Robin Marshall, University of Manchester

Maximising Impact of UK-India Collaborative Research

SIN India, jointly with the Research Councils UK delivered the UK-India IMPACT symposium in December 2010 which aimed to increase the impact of jointly undertaken research activity between both the countries. The report from the event highlights the benefits, barriers and the enablers of maximising research outcomes. Both the teams are now working on a follow-up event to the symposium which will be sector-focused and will have greater industrial engagement. In addition, the UK Intellectual Property Office has agreed to with India on the management of IPR in UK-India collaborative research.

Indian Institute of Science Lecture Series

Professor Alison Richard, then Vice-Chancellor of the University of Cambridge, gave the first lecture in the SIN India-Research Councils UK-supported Indian Institute of Science (IISc) Lecture series. This high profile series of events continued throughout 2010 to commemorate the Indian Institute of Science's centenary year and celebrate the long historical links between the IISc and the UK. During Professor Richards' visit, the University of Cambridge and Infosys signed a Memorandum of Understanding to pave the way for collaborative research ventures in the areas of engineering, management and business, architecture and pharmaceutical sciences. Through this, Cambridge and Infosys seek to develop and implement key opportunities over the next three years.

Figure 25. Professor of Mathematics at the University of Oxford and author of "The Music of the Primes", Marcus du Sautoy, playing the trumpet during one of the lectures to teach maths to a packed audience, as part of the UK-Indian Institute of Science Lecture Series. May 2010.

Israel

For a profile of Israel with facts and figures including economic trends and commercial relations with the UK, click here.

Israel continues to lead in the national spend on R&D relative to its GDP - 4.9% (2009), has the largest number of start-ups outside the US, and has more companies traded on NASDAQ than any European country. Israel also accounts for over 1% 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 in stem cell research.

Israel is ranked first for availability of scientists and engineers, third for quality of scientific research organisations, third for technological readiness and sixth for overall innovation[17]. Five Israelis have won Nobel Prizes within the last eight years in the fields of chemistry and economics.

Israel is one of the world's technology power houses leading in areas such as software and ICT industries, satellite capabilities, renewable energy, agriculture and agrotechnology, water technologies, electro-optics, medical equipment, as well as research in areas such as life sciences, nanotechnology and stem cells.

The Israeli government has given priority to biotechnology and nanotechnology, giving projects in those fields preferential funding. It has also introduced a programme for the development and commercialization of water and renewable energy. The Israeli government invests in mechanisms for innovation and technology transfer including a programme of technological incubators and consortia bringing together industry and academia. Technologies such as network firewalls, disk-on-key technology, IP telephony, zip compression, the ingestible pill size camera, modern drip-irrigation technology, ICQ instant messenger and many more were Israeli innovations.

Figure 26. Prof. Michal Lavidor, of the Department of Psychology at Bar-Ilan University together with postdoctoral researcher Oded Meiron, applies transcranial magnetic stimulation to British Ambassador to Israel Michael Gould MBE. December 2010.

[17] IMD World Competitiveness Yearbook (2008)

Israel is currently holding the EUREKA chairmanship – a testimony to Israel's innovative capabilities. The Science and Innovation Network team in Tel Aviv is taking full advantage of the wide range of Israeli innovation and research as well as of its entrepreneurial spirit. In the past year, it has been involved, for example, in bringing out a delegation to the Eilat-Eilot Renewable Energy Conference and Exhibition and in setting up the UK-Israel Life Sciences Council for promoting Life Science ties between the two countries.

Achievements of the Science & Innovation Network in Israel

Secretary of State Announces UK-Israel Life Sciences Council

Foreign Secretary William Hague hailed UK-Israel science and business ties in high-level dinner organised by S&I in November 2010, observing the importance of science and technology to both countries, and the relationship between them.

The Foreign Secretary also praised the Britain Israel Research and Academic Exchange programme (BIRAX), now in its second year, and announced the establishment of a new top level UK-Israel Life Sciences Council, which will take scientific collaboration between the two countries to a new level.

"Science is rightly one of the cornerstones of the relationship between Britain and Israel - our countries are scientific superpowers. Both are countries that have built up our economies and our identity through being leaders in science and technology."

- William Hague

Figure 27. Foreign Secretary William Hague with Israeli ministers, BIRAX awardees and Science and Innovation Attache. November 2010

"The mission led to an exciting new idea which is still embryonic but I have a clear idea of who I can develop it with over the next two years..."

- Fionnuala Costello, Technology Strategy Board, February 2011

Inaugural meeting of UK-Israel Life Sciences Council

At the first meeting of the new UK-Israel Life Sciences council, it was decided to focus the collaboration on regenerative medicine – an area in which the UK and Israel have complementary strengths and to which they can add value. The new initiative will be a continuation of BIRAX – the Britain Israel Research and Academic Exchange Programme and will increase its current scope. First calls for this initiative will be announced towards the end of this year. The members of the new UK-Israel Life Sciences Council include Sir John Walker and Sir Aaron Klug, as well as Professors Raymond Dwek, Sir Marc Feldman, Baroness Susan Greenfield, Chris Mason, Lord Naren Patel, Sir Richard Sykes and Lord Robert Winston.

Figure 28. The Science and Innovation team in Israel with Professor Sir Richard Sykes and Professor the Lord Winston in January 2011

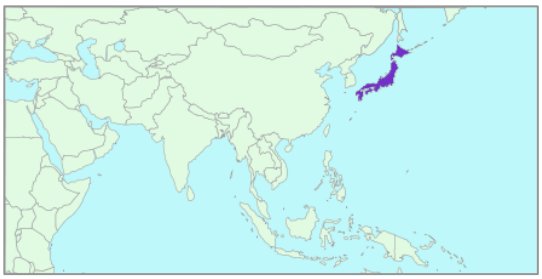
Renewable Energy Mission to Israel in February 2010

Representatives from 13 universities and companies visited Israel to present at the Eilat-Eilot Renewable Energy Conference and Exhibition. The visit, which was organised by SIN Tel Aviv, included site visits and meetings with government bodies, regulators, researchers and companies. The delegation included representatives from several companies including ITM Power, Green Structures, the Technology Strategy Board (TSB) and several universities including Oxford, Cambridge and Kent. A networking event organised by the Embassy to introduce delegates to local and international contacts was attended by over 150 guests. Outcomes of the visit include many leads and follow ups on possible research and commercial collaborations.

"The Embassy has an amazing team, their enthusiasm and friendliness is exceptional. Adee and Abigail went out of their way to ensure that we got the best possible outcome from the conference."

- Annabel Yadoo, Cambridge University, February 2011

Japan



For a profile of Japan with facts and figures including economic trends and commercial relations with the UK, click here.

Japan's economy is grounded on technology and is currently the world's third largest. While contributing 7% of world GDP, Japan accounts for around 13% of total global R&D spending and has 20% of the top global industry R&D spenders. Japan's massive research expenditure stands at around 3.7% of GDP, of which nearly 80% comes from the private sector. Japan's top ten companies spend more on R&D than the whole of the UK public sector and industry combined. Key industrial sectors are energy, automotive, ICT and electronics, and pharmaceuticals.

Government science expenditure amounts to 3.6 trillion yen per year (£25 billion). The main planning tool is the 5-year basic science & technology (S&T) plan. The fourth basic plan started on 1 April 2011 and envisions Japan as a state that "cultivates science and technology as a culture" and stipulates that funding for S&T is a priority investment for the future. The plan includes a target of 25 trillion yen (£190bn) or 1 percent of GDP in the government's R&D budget over a period of five years, with industry contributing 3% to meet the impressive target of 4% of GDP by 2020. The government has identified twin priorities of "green innovation" and "life innovation". These are intended to increase the impact of public and private R&D and to secure greater social and economic benefit from research in low carbon technology, energy efficiency and healthcare.

Areas of strength include ICT, engineering, energy technologies and life sciences. Areas of weakness include the translation of basic research in life sciences, bureaucracy, and internationalising the science base. Both the strengths and weakness of Japan's science base enable complementary links with UK expertise and forging of strategic partnerships.

The devastating earthquake and subsequent tsunami which struck on 11 March led to a review of S&T priorities. A modified version of the 4th Basic Plan will be published in August 2011, prioritising recovery from the disaster; green innovation focussing on energy technology; strengthening basic research and human resources; and improving communication on emergencies. There is likely to be more emphasis on green alternatives to nuclear power, forcing Japan to rethink its plan to increase nuclear supply to 50% of the energy mix. An additional multi-trillion yen budget has already been passed to support reconstruction.

Overall, Japan has increased the emphasis on developing international collaborations and improving links between universities and industry, with a shift in policy from the 'hardware' to the 'software' of technology development i.e. human resources, mobility. This is therefore a good time to be forging links with Japanese partners.

Achievements of the Science & Innovation Network in Japan

Accelerated UK-Japan research collaboration in neuroscience

In recent years UK-Japan research collaboration in brain science has covered brain machine interface (BMI), multimodal brain imaging, and mental illness. In January 2011, the Tokyo S&I team jointly organised the international neuroscience symposium with Tohoku University. The symposium resulted in a Memorandum of Understanding signed by Tohoku University and University College London, aiming to promote further collaborative research and researcher/student exchange. The UK academics also visited RIKEN Brain Science Institute to establish networks with leading neuroscientists in Japan. UK and Japanese experts are discussing joint applications to their national funding bodies to support further collaboration.

Collaboration on smart grids

The S&I team in Osaka hosted a UK-Japan workshop on smart grids to stimulate discussions between researchers on technical challenges and barriers to implementation. S&I worked with local UKTI colleagues to market smart grid investment opportunities in the UK to an audience of major Japanese companies. Researchers involved in the workshop have been invited to one another's future conferences and there is the possibility of exchange of researchers. Companies have expressed interests in investing in UK energy research, and one of Japan's major energy research agencies has subsequently published a call in Japan for proposals for a scoping study of opportunities for engagement with smart grid developments in the UK.

Figure 30: Looking at energy generation and management systems on display at the Kansai Electric Power Company showroom in Osaka

Figure 29. Professor Joe McGeehan of the University of Bristol talks to Japanese academics at a seminar in Osaka on smart grids, co-hosted by SIN and UKTI.

UK-Japan workshop on nano-electronics

The S&I team in Tokyo hosted a workshop in nano-electronics in February 2011. Oxford University and National Institute of Materials Science (NIMS) identified common interest in quantum spin systems, bringing together the expertise of Oxford in spin control and measurement and of NIMS in device fabrication and characterization. Future collaborations are in development. The Tokyo Institute of Technology and University of Lancaster will initiate joint studies on graphene and will broaden the scope of research contacts between UK and Japan into low-dimensional material beyond graphene. They plan to hold two further events on the physics, chemistry, and applications of graphene.

First UK-Japan workshop on mood disorders

The Tokyo S&I team hosted the first UK-Japan Workshop on Mood Disorder in February 2011. The workshop led to the establishment of the Bipolar Disorder Research Network Japan, which will adopt UK's best practices and build links with BDRN in the UK. An ad hoc seminar on mood disorder research and policy attracted more than 100 participants, with a broader audience able to follow proceedings via online broadcasting of the proceedings. Some specific collaborative projects have already been planned and the researchers are exploring funding opportunities for joint working.

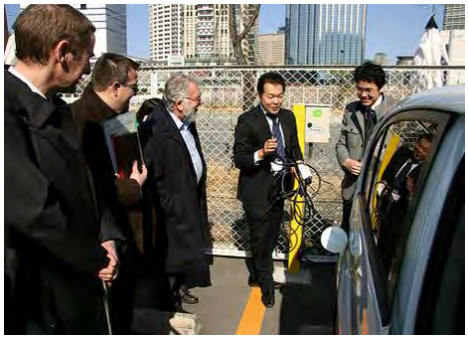


Figure 31. Graeme Burt (Strathclyde), Dritan Kaleshi (Bristol), Juan Matthews (UKTI), an Osaka City representative and Ed Sumoto (SIN) on a tour of Osaka's electric vehicle charging infrastructure

Collaboration in climate sciences

The S&I Tokyo team have facilitated UK-Japan collaboration on the impact of climate change since 2009. As a follow-up activity on modelling the yield and quality of crops under extreme climate conditions, support was given to two UK and one Japanese researcher to discuss collaborative research proposals. All three researchers launched separate collaborations. The Embassy team also invited a researcher from King's College London to Japan for a conference; her participation led to an expert in the Tokyo Institute of Technology doing collaborative research in King's College in 2011.

Innovation in Plastic Electronics

As a result of the UK Plastic Electronics Seminar held in November 2010, the University of Kyushu and University of Durham signed a Non Disclosure Agreement. For this aim, Kyushu organised a joint seminar in February, inviting an LED expert from Durham. Later this year, Durham will start joint research with Kyushu's newly established Centre for Organic Photonics and Electronics Research under the auspices of the Japanese Government's Funding Programme for World-Leading Innovative R&D on Science and Technology (FIRST).

An MoU between the University of Birmingham and Yamanashi University on fuel cell research and education

The S&I Tokyo team introduced the EPSRC-funded Doctoral Training Centre on fuel cell and hydrogen technology in the University of Birmingham to a number of Japanese research institutes in July 2010. This led the University of Birmingham to conclude an MoU on research and education with Yamanashi University, a prestigious institution in this area. Prior conclusion of the agreement, three young Birmingham researchers joined a summer school hosted by Yamanashi; and Prof Bruno Pollet and world-leading researcher Prof Masahiro Watanabe became a visiting professor to each other's universities.

New Zealand

For a profile of New Zealand with facts and figures including economic trends and commercial relations with the UK, click here.

New Zealand has weathered recent economic difficulties reasonably well and recovery is underway, though faltering under the strains of the recent Christchurch earthquake, which affected 10% of the economy. New Zealand lags behind in GDP per capita, and growth has been mainly driven by increased labour utilisation rather than capital investment. New Zealanders work long hours, but with low productivity.

The New Zealand Government invests about 0.52% of GDP in research, science and technology. This figure has remained steady for 10 years or more. The private sector invests around 0.6%. New Zealand Trade and Enterprise, set up in 2000, develops business capabilities within New Zealand and export 'beachheads' in selected overseas markets.

A challenge for New Zealand is how to combine excellent basic academic research with an entrepreneurial culture for practical application. New Zealand's Prime Minister has placed emphasis on innovation as the key to moving forward in economic recovery.

New Zealand's firms offer fertile ground for collaboration, with its strengths in biology, agriculture, horticulture, environmental science, earth science, materials science, health research, ICT and indigenous knowledge. Firms such as Fonterra dairy and FP Health Care maintain sizeable research capacities.

Achievements of the Science & Innovation Network in New Zealand

The British High Commission set up a science officer position in 2007 specifically to build UK-NZ commercially-orientated R&D collaborations. Since that time, some 15 UK organisations have begun 25 or more concrete collaborations either instigated or assisted by the Wellington-based science officer, and 75 organisations have been significantly assisted in building towards new collaborations with New Zealand.

Close collaboration with UKTI's New Zealand team ensures that UK R&D missions to New Zealand are jointly advertised to cover the R&D, Investment, and Trade areas, with UKTI being responsible for trade and investment. While 2010 was a difficult year economically, three UK groups reported six substantive collaborations arising from R&D initiatives.

Much work also goes into nurturing new initiatives, and 2010 saw 26 UK organisations significantly assisted in seeking new collaborations with New Zealand.

Collaborating on nano-materials

Durham University reported on textile work with Victoria University in New Zealand, and projects underway with Auckland University of Technology, Woolyarns and New Zealand's Cawthron Institute on textiles and biofilms. These projects dealt with plasma deposition of nano-materials on surfaces in order vastly to alter their surface properties.

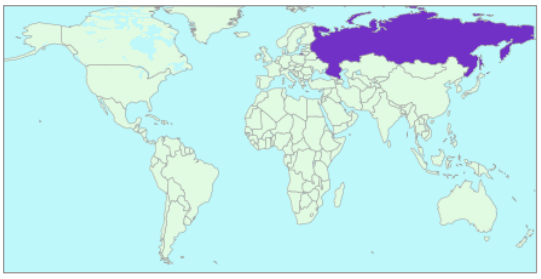
Innovation collaboration on biological reactors

The UK Centre for Process Innovation in Redcar reported signing a Memorandum of Understanding and completing a contract with New Zealand's Abel Engineering, on biological reactors. Abel is now building linkages with an increasing range of UK technology groups.

Facilitating investment in the UK

New Zealand's Izon, a university spin-out developing entirely novel methods of particle sizing and counting, reported an inward investment to the UK, setting up a UK office in Oxford University Science Park.

Russia



For a profile of Russia with facts and figures including economic trends and commercial relations with the UK, click here.

Russia continues its ambitious plans to modernise the economy through President Medvedev's Commission for Modernisation and Technological Development. The key focus is on technological breakthroughs, with 10 billion roubles for five key areas in 2010/11: nuclear technology, space and communications technology, energy efficiency, medical technology and information technology. Prime Minister Putin has also announced spending of 17.5bn Rub in 2011 for special economic zones, technological parks and science cities from the Federal Budget and has created a new Agency for Strategic Initiatives aimed at promoting innovation projects.

Russia has about 375,000 researchers compared to 1.2 million in 1990 and higher education now plays a small role - just 4% of R&D spend. R&D expenditure overall was 1.03% of GDP in 2008. In 2010, The Times Higher Education ranked Moscow State University (the best university in Russia according to Russia's national university rating project of 2010) as 237th in the World University Ranking. Russia's share of the world's papers over a recent 5-year period was 2.6%.

A Russian Innovation Index commissioned by Russia's Ministry of Education and Science was compiled by Moscow's Higher School of Economics. Aimed at analysing science and innovation in Russia using OECD methodologies, their main conclusion was that Russia has not increased its innovation over the last 10 years up until 2011 despite new initiatives and only 9-10% of Russian companies are involved in technological innovation.

Russia's key Science & Innovation strengths

Although Russia's output in research has weakened considerably in recent years, Russia is notable in nuclear physics, particle and fields and multidisciplinary physics. Russia also maintains strength in petroleum engineering, geochemistry and geophysics. Key growth areas include neuroscience and behaviour, environment/ecology and medicine.

Russia is keen to engage internationally and is the largest financial contributor (£210 million) to the International Thermonuclear Experimental Reactor (ITER) in Hungary. Russia is a strong contributor to the European ExFel project in Hamburg and the Large Hadron Collider at CERN. Russia also participates in The European Synchrotron Radiation Facility (ESRF) and the Facility for Antiproton and Ion Research (FAIR). Russia has requested to become an Associate Member of EU Framework Programme 7.

Opportunities for the UK

The UK is Russia's 4th most frequent partner after the US, Germany, and France.

There is strong scope for UK innovation experts to provide advice on setting up a national innovation infrastructure in Russia. Good opportunities also exist for UK researchers to set up links with a Russian university and Institute combined with Russia's new US $2 billion energy efficient innovation city called "Skolkovo", nicknamed Russia's Silicon Valley. Up to 5 million US $ is available over 3 years across Skolkovo clusters including for energy efficiency, Space science & technology, nuclear and lifesciences and SIN Moscow is working with UK partners and these clusters to foster opportunities.

Space industry opportunities exist too. £520 million will be spent over the next three years on the new Vostochny Cosmodrome in the Amur Region, to take on some satellite launch duties from the existing Baikonur Cosmodrome in Kazakstan. £370 million will be spent over nine years on developing a nuclear-powered spaceship that will fly to Mars. A new generation Angara rocket is due to be tested in 2013, and "Glonass" a navigation system to rival the US's GPS, is being developed as one of four space projects funded under President Medvedev's Commission.

In 2010-2015, 1.41 billion is being spent on nanotechnology and a "National Nanotechnology Network" (NNN) encompassing leading Russian universities and research centres. The Kurchatov Institute will co-ordinate scientific research in the NNN and Rusnano will analyse the nano products market and monitor state-funded R&D projects. Rusnano have also launched an internet shop offering nano products for innovation companies and scientists.

There are also opportunities for basic and applied research collaborations with key institutes within Moscow and other regions where science is strong, including St Petersburg, Tomsk, Novosibirsk, and Yekaterinburg and Dubna – particularly in the Modernisation Commission's 5 key areas receiving special funding.

The team of two Science & Innovation Officers in Russia is based in Moscow. In 2010, a new First Secretary for Science and Innovation set up a dedicated Science and Innovation section within the British Embassy.

S&I Russia are strongly focused on creating new partnerships and enhancing existing partnerships towards the prosperity of both nations under the UK-Russia Knowledge Partnership, launched by Foreign Secretary William Hague during his visit to Moscow in Oct 2010. Under the Knowledge Partnership, S&I Russia are working with UKTI Russia, the Climate Security section at the British Embassy Moscow and the British Council in seeking to engage UK companies in harnessing Russia's scientific strengths in pharmaceuticals, energy, aviation, materials science and space science. Minister for Universities and Science, David Willetts launched two S&I Russia initiatives in 2011: Expert Innovation Roundtables and Space Science Café lecture series.

Achievements of the Science & Innovation Network in Russia

Collaborations in Life Sciences

Astra Zeneca has signed an agreement with Skolkovo Innovation City during the Minister for Universities and Science, David Willetts visit to Moscow. A joint accelerator training programme & a Memorandum of Understanding (MoU) on colliders has been agreed between the Institute of Nuclear Research and Oxford University towards breakthroughs in cancer and a low carbon energy source of the future, following a successful S&I Science Café on accelerator science in Oct 2010.

UCL signed a space medicine treaty with the Institute of Biomedical Problems, Moscow at S&I Moscow's Space Science Café on the MARS500 experiment. UCL have also signed an MoU with the Central Research & Development Institute for Robotics and Cybernetics, the St Petersburg State Polytechnic University, and the Institute of Physics of the Earth, Russian Academy of Sciences and IMBP on space research.

Figure 32. Prof Grigori Shirkov (Joint Institute for Nuclear Research Dubna) and Prof Andrei Seryi (John Adams Institute of Accelerator Science, Oxford University) speak at S&I Moscow's Science Café on Acceletaor Science towards cancer cures and a carbon free energy source of the future.

Figure 33. Cosmonaut Sergei Krikalev and Prof Ushakov, Director of the Institute of Biomedical Problems at HMA Anne Pringle's Science Reception to celebrate UK Russia Joint Committee on Science & Technology cooperation.

Assisting Collaboration in Energy Efficiency

Several research consortiums between top UK and Russian universities and Russia's new innovation city, Skolkovo, are currently underway with assistance from S&I Moscow. A Memorandum of Understanding has been signed between Cambridge University and Russia's National University of Science and Technology "MISiS" on nanotechnology; an agreement on energy research between Imperial College London and Moscow Power Engineering Institute has been signed with discussions underway on high efficiency photovoltaics research collaborations between Imperial College London and the Ioffe Institute in St Petersburg following S&I Russia's Expert Innovation Roundtable on High Efficiency Photovoltaics.

Joint Statement on Collaboration

On 22 February 2011, Minister for Universities & Science, David Willetts came to Moscow to agree a Joint Statement with Russia's Minister for Education and Science, Andrei Fursenko. This statement agreed enhanced collaboration on Nuclear & particle physics, energy efficiency, Space science, Arctic and Climate science, energy efficiency & nanotechnology. Mr Willetts was joined in Moscow by a delegation of top UK scientists in these fields who met at the Ministry of Science for the Joint Committee Science & Technology Commission 2011-2013. As a result, David Willetts launched SIN Russia's new initiative of a raft of Expert Innovation Roundtables; these are designed to target mobility of world-class scientists towards enhanced collaboration potential in the key areas above.

Figure 34. Minister David Willetts announces the new Joint statement on Science & Technology cooperation at Bauman State Technical University.

Figure 35. HMA Anne Pringle meets Rector Alexsandrov and Dean Prof Chernikov of Bauman State Technical University, who are collaborating with Glyndwr and De Montford Universities on nano, materials and composites research.

Collaboration in Materials Science

At SIN Russia's Expert Innovation roundtable on Materials of the Future, Bauman State Technical University and Glyndwr University announced intentions to create a virtual joint laboratory of composites and lasers. Two joint PhDs at Airbus-Glyndwr laboratory have been created and discussions are underway with developing links with Skolkovo Innovation City. In 2010, S&I Russia facilitated 45 teachers and researchers from Bauman University attended innovation seminars on laser science and discussed joint composite research projects. A joint bachelors programme has now been agreed between Bauman and De Montford University

Southeast Asia

For profiles of countries in Southeast Asia, with facts and figures including economic trends and commercial relations with the UK, click here.

Southeast Asia is an economically and scientifically diverse region, ranging from affluent city-state Singapore to emerging economies rich in biodiversity. SIN focuses efforts on Singapore, manages proactive relationships with Malaysia, Thailand and Vietnam and reactive relationships with Indonesia and the Philippines.

SINGAPORE

Singapore has a world-class research base with research intensive universities, industry oriented research institutes, top international talent, strong government support and attractive incentives for R&D intensive companies. Singapore has been ranked the world's most innovative country[18]

In its new science and technology plan, 'Research, Innovation and Enterprise 2015,' Singapore announced a 20% increase in public R&D expenditure to £8 billion for the 5 year period until 2015, increasing public expenditure on R&D to 1% of GDP, on par with the most advanced countries. The government has also set a target of achieving a gross expenditure on R&D of 3.5% of GDP by 2015.

Singapore is an applied research hub and gateway to Asia, with state-of-the-art infrastructure including Biopolis, co-locating public and private biomedical R&D, and nearby Fusionopolis housing physical sciences, engineering and ICT research. Singapore has strengths in biomedical sciences, electronics, infocomms & media, cleantech and engineering. Significant focus has recently turned to energy and maritime and offshore research, and Singapore is developing a new £123 million Maritime Research Institute including wave basin and towing tank facilities.

Singapore's Agency for Science, Technology and Research (A*STAR) and leading local universities are keen to develop international partnerships with leading overseas institutes. To capitalise on this opportunity, the SIN team have organised over 65 workshops attracting 12,000 participants since 2004, which have stimulated new UK-Singapore collaborations across a broad range of themes.

[18] Boston Consulting Group, 2009 & Information and Technology and Innovation Foundation, 2009

MALAYSIA

Malaysia boasts a vibrant economy, R&D intensity more than doubled between 1996 and 2007 and the last few years have shown record levels of investment in education. The Malaysian Government recognises the importance of science and innovation to move the economy up the value chain. Malaysia is one of the world's top 12 'mega-biodiverse' countries with over 2,000 unique higher species of flora and fauna[19]. SIN works closely with partners including the Malaysian government, the Royal Society and British Council to identify and pursue collaborations.

THAILAND

Thailand ranks second in Southeast Asia in its volume of published research articles, and houses centres for the Wellcome Trust and London School of Hygiene & Tropical Medicine. SIN engagement is channelled through a partnership programme with the National Science and Technology Development Agency (NSTDA), Thailand Research Fund (TRF) and leading universities, across the fields of infectious diseases, healthcare, agricultural and aquaculture technology, biofuels, nanotechnology and collaborative programmes for PhD students.

VIETNAM

Vietnam is a rapidly developing country whose economy is largely agriculture-based. It houses a renowned Wellcome Trust-Oxford University Tropical Disease research institute. SIN has a joint action plan with the Ministry of Science and Technology following up collaborative opportunities identified by the Government Chief Scientific Adviser, Professor John Beddington, in 2009. These include healthcare and infectious diseases, climate change, food and agricultural science and low-cost R&D/manufacturing solutions. SIN and the British Embassy in Hanoi work closely with the British Council Vietnam and the Department for International Development (DfID) Vietnam to implement the science and technology aspects of the strategic partnership signed in September 2010.

Achievements of the Science & Innovation Network in Southeast Asia

OECD Review of Innovation

SIN Singapore assisted the OECD in conducting an analysis of innovation in Southeast Asia, which will improve the knowledge of innovation system dynamics in the region and serve as a platform for greater science, technology and innovation collaboration between the UK and Southeast Asia countries. The OECD Ministerial Council made a strategic decision to prioritise outreach work with Southeast Asia and through the report, due to be published in September 2011, aim to put the region more firmly on the STI map. In preliminary findings, the OECD identified a high level of dynamism in the region, which prioritises innovation and has a unique diversity, geography and pool of resources.

[19] UN Environment Programme

Joint Imperial College-NTU medical school

SIN Singapore was instrumental in Imperial College establishing a new Medical School in partnership with local university, Nanyang Technological University (NTU). This provides further successful overseas expansion for a world-leading University and improves UK education through academic and student exchange programmes, as well as boosting UK science through access to research in SE Asia.

"Combining NTU's core strengths in engineering and business with Imperial's world-renowned medical expertise, we are confident that the new medical school at NTU will become an outstanding reference point around the world."
- Dr Su Guaning, President of NTU

New insights into cancer from UK-Singapore-Thailand partnerships

SIN Singapore organised a Southeast Asian workshop on cancer which led to several new collaborative initiatives and resulting partnerships have improved understanding of the mechanisms of cancer. An article in the prestigious journal Nature was a result of collaboration between UK, Singapore and Swedish researchers at the University of Cambridge, A*STAR, and the Karolinska Institutet. Another collaboration involved Oxford University and Thailand's Chulalongkorn University, who applied a series of cell-death related antibodies to clinical samples to determine their suitability for cancer diagnosis.

"Crops for the future" centre in Malaysia

SIN Malaysia helped the University of Nottingham Malaysia Campus secure a government grant to develop a 'Crops for the Future' centre in Malaysia, confirmed in July 2010. It also worked with UKTI to broker memoranda of understanding between British and Malaysian companies on at the International Conference on Green Technology in October 2010. These UK-Malaysian partnerships will provide a platform for research and technological development, as well as demonstrating strong commitment to a low carbon, green growth agenda.

UK-Vietnam Strategic Partnership

The SIN team based in Singapore has supported the development of bilateral cooperation in Science and Technology between UK and Vietnam. The importance of this work is recognised in the Strategic Partnership, signed in September 2010 between Foreign Secretary William Hague and the Vietnamese Deputy Prime Minister Pham Gia Khiem.

£3m UK-Thailand project on resistance to malaria

Following a SIN Singapore workshop, the London School of Hygiene and Tropical Medicine partnered Thai counterparts from Mahidol University to research anti-malarial resistance. The collaborative project which involves the London School (LSHTM), Liverpool School (LSTM) and Oxford – Mahidol has now been awarded £3 million from the Department for International Development to further understand and monitor the spread of artemisinin-resistance in malaria patients in Cambodia and neighbouring countries.

South Korea

For a profile of South Korea, with headline facts and figures including economic trends and commercial and political relations with the UK, click here.

In 2008 Korea spent $45.3 billion (£28.3 billion) on R&D, the fourth highest amount in the world after the United States, Japan and Germany. The Korean government's R&D budget for 2011 exceeds 14 trillion won (£7.8 Billion), an 8.6 percent increase on 2010. R&D is performed mainly by industry (76%), followed by the government (12%) and the higher education sector (11%). Korea has the fourth highest R&D intensity in the OECD after Sweden, Finland and Japan, with gross expenditure on R&D increasing from 3% of GDP in 2006 to 3.47% in 2008. Korea has plans to raise this to 5% by 2012. The number of researchers per thousand employed have increased steadily from five in 2000 to ten in 2008, above the OECD average.

Korea has two universities in the top 100 QS World University Rankings 2010: Seoul National University, SNU (50) and the Korea Advanced Institute of Science and Technology (KAIST) (79), but KAIST and the Pohang University of Science and Technology (POSTECH) were ranked ahead of SNU in Korean rankings. Korea ranks 11th in the world in papers for scholarly journals, with the science citation index in 2009 up more than 40% from 2007. Korea ranks 4th in the world in the number of new patents applied for each year, with the number of Korea's international patent applications exceeding 8,000 in 2009, a 13.9% increase from 2007.

Korea's R&D expenditure remains heavily focused on close-to-market development with an emphasis on low carbon green growth technologies. Strengths include: mobile handsets; plasma and LCD displays; DRAM (direct random access memory) and flash memory chips; ships and automobiles. In recent years there has been greater investment in basic science. Korea is involved in fusion research (a partner in the international ITER consortium) and operates one of the worlds more advanced Tokamak experimental fusion devices: K-Star. Korea is developing its own space launch capability with two (as yet unsuccessful) launches carrying 100kg satellite payloads from Korean territory in 2009 and 2010.

The government has identified 22 industries as the new drivers of its future economic growth. Most investment is expected to come from industry with the government providing for more high-risk projects. Korea's new growth engines include:

- Energy/Environment: clean coal technology, biofuels from marine sources, renewable energy, solar cells, carbon dioxide capture and storage, fuel cells, nuclear power plants
- Transportation: green cars, ships and offshore systems

- New IT: semiconductor, display, mobile telecommunications, LED lighting, RFID/USN
- Biotechnology: new medicines & medical equipment
- Knowledge-based services: software, design, healthcare, cultural content

Achievements of the Science & Innovation Network in South Korea

A team of four Science & Innovation Officers is based in Seoul. In 2010-11 SIN Korea was involved in setting up over 23 new networking projects and supported the creation of 6 new bilateral research collaborations.

Collaboration and investment in wind turbines

In March 2011 Doosan Power Systems announced plans to invest £170m in a Scottish renewables headquarters. Doosan's Korea-based research team are negotiating research partnerships with potential UK partners, including the National Renewable Energy Centre (NAREC) where Doosan will test their new wind turbines. Doosan Power Systems joined a S&I/UKTI Mission to All Energy in 2009 and SIN Korea supported a NAREC visit to Korea in November 2010.

Diagnosing eye disease using cloud computing

eMediaTrack, a spin out company from the University of Oxford, is collaborating with POSCO ICT and the Catholic University Hospital on product development and clinical testing of a cloud-based medical algorithm called IRIS (Intelligent Retinal Image Searching) which provides remote access to a database of iris scans for the diagnosis of eye disease. On 10 March 2011 the partnership signed a memorandum of understanding to jointly develop the technology.

"I would commend the team on making my visit enjoyable and interesting... I really don't think more could have been done to ensure that my visit was productive and worthwhile."

- Dr Catherine Ewart, Head of Futures Programme, STFC

UK-Korea Agreement on Scientific & Technological Cooperation

The UK - Korea Agreement on Scientific and Technological Cooperation was signed in June 1985 and sets out the framework for bilateral collaboration. A UK-Korea Joint Committee on Science and Technology Cooperation meets every two years to coordinate bilateral activity. The 10th Joint Committee was held in Seoul in from 25-26 November 2010. Under a new structural arrangement separate meetings were held between the Department for Business Innovation and Skills (BIS) and the Korean Ministries of Education, Science and Technology (MEST), Knowledge Economy (MKE) and Health and Welfare (MoHW) to coordinate future bilateral S&T activity.

Joint Research Centres

Two UK companies have joint R&D centres in Korea: Rolls Royce and Pusan National University have a joint University Technology Centre (UTC) in Thermal Management; in February 2010 Pusan National University, Lloyds Register Education Trust and the University of Liverpool opened an International Joint R&D Centre in Ship and Offshore Structural Design Innovation.

Collaboration on plastic electronics

Supported by the BIS Global Partnerships Fund, Imperial College's Centre for Plastic Electronics (CPE) have strengthened collaboration with Professor Soonil Lee at Ajou University and Samsung Advanced Institute of Technology (SAIT) on research into plastic electronic devices. These links are moving towards new research partnerships.

MEST World Class University Programme

Four UK academics participate in the Korean Ministries of Education, Science & Technology (MEST) World Class University Programme: Professor Stephen Jackson (Nottingham University) with Korea University in neurology; Professor H. K. D. H. Bhadeshia (Cambridge University) with POSTECH in ferrous technologies; Professor Ji-seon Kim (Imperial College London) with KAIST in plastic electronics: Professor John Wood (University College London) with Seoul National University in molecular medicine.

Figure 36: The Korean Icebreaker "Araon" on station

Polar research collaboration

A Royal Society grant was awarded to Dr Phil Hwang at the Scottish Association for Marine Science (SAMS) to extend the reach of UK Arctic research to the Pacific region of the Arctic. The grant promotes new collaboration with researchers from the Korea Polar Research Institute (KOPRI) and provides SAMS with access to the Korean state-of-the-art research ice breaker Araon. The UK and Korea have run a joint Focal Point Programme in polar research since 2008.

Alzheimer's Disease workshop at BioKorea

At BioKorea, Korea's leading biotechnology exhibition and conference in September 2010 SIN Korea supported an international satellite research workshop on Alzheimer's Disease. In November 2010 at the UK Korea Joint Committee on Science and Technology, BIS/MoHW signed an MoU in support of a joint collaboration programme funded principally by the Korean Government to look at the causes and treatment of Alzheimer's Disease.

Taiwan

For a profile of Taiwan, with headline facts and figures including economic trends and commercial and political relations with the UK, click here.

According to the World Economic Forum's (WEF) Global Competitiveness Report 2010-2011, Taiwan ranked 13th worldwide and 4th in Asia, and in terms of innovation and business sophistication, rose to 7th place in the world.

Taiwan is now an acknowledged leader of information technologies, and home to many of the world's largest makers of computers, telecommunications, photonics, photo voltaic and associated hardware. More than 50% of all chips, nearly 70% of flat panel displays and more than 90% of all portable computers are now made in Taiwan. Its most successful companies may no longer be huge, but still nevertheless little-known through the practice of contract manufacturing; companies such as Hon Hai, also known as Foxconn, currently produce the iPad2 for Apple, and Quanta are rumoured to be working on production of the soon to be released Amazon Kindle Tablet.

Other examples of successful IT companies in Taiwan include Acer, which for the first time surpassed Dell in 2009 and became the second largest maker of personal computers, and HTC (formerly known as High Tech Computers), which started out making smart phones for big Western brands on a contract manufacturing basis, but has since built up a brand and product presence of its own, challenging Apple's dominance in the market.

Taiwan's industrial policy has now shifted towards the new industries of the future, hoping to repeat the successes of the IT industry in biotechnology, nanotechnology and renewable energy and the environment. With a clear development focus and government sponsored top-down planning mechanisms in place, these new and emerging industries present many opportunities for collaboration and commercialisation, complementary to the UK's strengths and expertise in this area.

Although initially slow to pursue the green technologies/climate change/renewable energy agenda, perhaps due to it being excluded from participation due to its unique international status, Taiwan has now fully committed to the transition to a low carbon economy. The S&I section are supporting work in this area, with diverse projects involving smart grids, green opto-photonic materials and e-waste management being some of the recently approved Global Partnership Fund (GPF) projects now being initiated.

Local S&I stakeholders are also very keen to maximise funding opportunities open to them if they join any UK led large scale European Framework Programme projects. Although Taiwan does not receive funding from the European Union as a non-beneficial partner,

local universities, research institutes and even companies may apply for funding from the National Science Council (NSC), the science funding body of Taiwan to support their collaboration and research endeavours in EU FP7 projects. The S&I section has and will continue to facilitate their participation and work together on maximising funding opportunities where available.

UK-Taiwan Research Collaboration

Taiwan has announced the project "Research Cooperation Initiative between Top UK and Taiwan Universities" for this 2010 academic year. Its purpose is to enhance mutual collaboration between UK and Taiwanese research teams and promote academic research cooperation with top UK universities by funding researchers from Taiwan for longer research visits to the UK, and to plan for future opportunities for potential large-scale research / EU plan development. The S&I Team's contribution during the implementation stages were invaluable, and in particular for the work undertaken to facilitate visa applications for Taiwanese researchers, through giving relevant advice followed by timely status updates.

Cooperation on fuel cells technology

Asia Pacific Fuel Cell Technologies (APFCT) of Taiwan are in ongoing discussions for collaboration with various UK stakeholders. The S&I Team introduced APFCT to UK stakeholders such as TSB, ERC and the KTNs at the TechnologyWorld 2010 event in London. APFCT specialises in low pressure Polymer Electrolyte/Proton Exchange Membrane (both known as PEM) fuel cells with possible uses in light vehicles and mobile applications. They are keen to seek partners to commercialise their technology and develop an UK and later on a European market presence. Being a fuel cell technology driven company, they are seeking partners to supply hydrogen to their infrastructure in the upstream, and manufacturers of scooters, buggies and other light vehicle applications as downstream partners.

USA

For a profile of the USA, with headline facts and figures including economic trends and commercial and political relations with the UK, click here.

The US is the world's scientific powerhouse. Total US spending on research and development in 2011 is predicted to be $405.36b - around 34% of the world's total R&D. Federal expenditure in 2010 was around $147.5 billion. In addition the US

- publishes over 60% of the world's highly cited publications
- is responsible for nearly 40% of the patented new technology created within the OECD
- is home to more than half of the world's top 100 universities, including 15 of the top 20.

President Obama continues to put science and technology at the heart of his agenda. The White House has highlighted six main challenges for science and technology for 2011/2012:

- Promoting sustainable economic growth and job creation
- Defeating the most dangerous diseases and achieving better health outcomes for all while reducing health care costs
- Moving toward a clean energy future to reduce dependence on energy imports while curbing greenhouse gas emissions
- Understanding, adapting to, and mitigating the impacts of global climate change
- Managing the competing demands on land, fresh water, and the oceans for the production of food, fibre, biofuels, and ecosystem services based on sustainability and biodiversity, and
- Developing the technologies to protect our troops, citizens, and national interests.

Agencies have been directed to encourage more high-risk, high-return research, including research that supports several disciplines working together to solve the "grand challenges" of the 21st century. Encouraging researchers to share data, and make datasets more widely available are also priorities.

The US /UK scientific partnership remains strong. 30% of the UK's international co-authored papers are with the US producing an impact which is 50% higher that the UK research base average. We have reaffirmed our commitment to strong collaboration in science and higher education with a joint UK-US statement during President Obama's 2011 State visit to the UK.

There are significant opportunities for UK researchers and policy makers to link with their US counterparts. Based in the Embassy in Washington and five Consulates across the US

(Boston, Atlanta, Houston, San Francisco and Los Angeles) SIN uses its local knowledge and contacts to help UK researchers to link with universities, and other research establishments. Through our work we have forged numerous collaborations in key UK priority areas and facilitated access to unique US facilities, materials and data. We also provide analysis of US science and innovation policies and practice. SIN works closely with the RCUK Office in the US (based in the Washington Embassy) which forges links between the research councils and US funders and the British Council which works with its' US counterparts to strengthen higher education links.

Achievements of the Science and Innovation Network in the USA

Learning from US best practice in stimulating innovation

The output from a SIN US run workshop has been used by BIS to quantify the benefit of prizes within government to stimulate innovation, alongside private sponsorship and support. SIN US is giving priority to providing best practice from the US as input to the Government's new prosperity agenda. The workshop, which included participants from the Royal Institute of British Architects, BIS, TSB and NESTA, focused on the structure, delivery and benefit of running prize competitions in stimulating innovation. Local support came from Harvard and MIT.

Promoting innovation in the clean energy sector

SIN US action has resulted in more than six new partnerships to drive the development of new technologies to achieve a rapid transition to a low carbon economy. A major success is the inclusion of the UK's SETsquared Partnership as a key technical and research partner for the US National Grid's Worcester, Massachusetts pilot demonstration project on smart grids. SIN US is now driving expansion of this collaboration across other states, and bringing in UK industry.

SIN activity has resulted new partnerships between Imperial College London and the University of California, Santa Barbara, and between Georgia Tech and Liverpool University in the area of solar energy.

"The work from the team to facilitate and make this Biofuels Sustainability Workshop happen is essential. It provides a mechanism to make the UK-USA interactions possible - without it I sincerely doubt whether the collaborations would have been possible to develop."
- Richard Murphy, Imperial College, London

SIN US has also been active in bringing together UK and US experts in the key area of bioenergy. These efforts have collectively resulted in one MoU, two student exchanges and the transfer of data and unique research materials to the UK. Over £530k of joint funding has also been secured by the partners involved to pursue joint activities.

SIN US has also been instrumental in formation of a new transatlantic Carbon Capture and Storage academic working group, from which a number of new collaborations are developing.

New collaboration on wellbeing facilitated by SIN USA

A SIN workshop has resulted in a new partnership between the UK's Economic and Social Research Council (ESRC) and the US' National Institute on Aging. Together the two organisations will co-fund a US National Research Council Panel on Measuring Subjective Wellbeing to generate new insights that will directly inform the UK Government's aim of developing official measures of well-being as a way of assessing societal progress.

Figure 37. SIN Boston and UKTI neurodegenerative diseases symposium at MIT McGovern Institute. March 2011

New partnerships to accelerate development of biomedical technologies

SIN US has enabled three major new partnerships to accelerate development of the next generation of biomedical technologies. King's College London (KCL) and UC San Francisco will carry out joint research in immunology and genetics, joint curriculum development and clinical training. This partnership also provides access for KCL researchers to key companies in the Bay area. The Institute of Psychiatry at KCL has separately developed a partnership with the Behavioural Neuroscience Institute at the University of California, Los Angeles, to pursue collaborative research in Autism and Alzheimer's Disease. A new student exchange programme also began on 1 June 2011 to ensure development of a sustained relationship. The third partnership between Cancer Research UK and the US National Cancer Institute, is focused on alleviating some of the barriers to international collaboration on clinical trials in rare and lethal cancers.

Collaborating on research into ocean acidification

SIN US has cultivated a UK-US research collaboration in ocean acidification. Designed to help combat one of the most pressing threats to marine ecosystems, SIN US secured funding for a series of successful UK-US research exchanges. This initial investment has yielded 16 new research partnerships, several agreements to share datasets and materials, a jointly published paper, joint UK/US participation in an ocean research cruise and plans for an institution-wide collaboration between two of world-leading marine research centres: the Plymouth Marine Laboratory and the Monterey Bay Aquarium Research Institute, with new outcomes continuing to accumulate.

Science and Innovation Network Team Profiles

Profiles and contact details for Science & Innovation Network teams around the world.

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Cristina Hori – Science & Innovation Officer

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Cristina joined the SIN Network in July 2005, having previously worked for UKTI at the British Consulate General. She graduated in Information Technology and has post graduate qualifications in Business Administration and Project Management. She has previously worked in the private sector as an information system and telecom administrator and company management co-ordinator.

Canada

Dr Nicole Arbour – Team Lead - Science and Innovation Network, Canada

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Nicole is based out of the British High Commission in Ottawa and covers federal science and innovation in Canada. Areas of focus: life sciences, polar research, energy and other areas as opportunities arise. Nicole holds a PhD in Biochemistry from the University of Ottawa. Previously, she worked as a research scientist for a small biotech company where she helped develop assays for pathogen identification.

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Gill is a part time (2 days a week) SIN Assistant and is based out of the British High Commission in Ottawa. Her role is to support the Science and Innovation Team (members of which are based in Toronto, Vancouver, Montreal and Ottawa).

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Nicolina is based out of the Consulate General in Montreal, and is responsible for SIN activities in Quebec and the Atlantic provinces, and her areas of focus include life sciences, aerospace and clean technologies. She holds a PhD in Environmental Sciences, at The Université du Québec à Montréal. Before coming to the consulate Nicolina worked with Ashoka Canada and IDRC.

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Paolo is based out of the Vancouver Consulate general, and is responsible for SIN activities in Western Canada, with areas of focus in energy, clean technology and life sciences. He holds a Ph.D. in Chemistry from the University of British Columbia (UBC). Before coming to the consulate, Paolo worked as a research scientist at UBC and the National Research Council of Canada.

Shannon Jones - Science & Innovation Associate

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Shannon is based out of the Toronto Consulate General, and joined the Science & Innovation Network in a supportive role (20% of her role is with SIN) in January 2011. She started with the FCO 4.5 years ago from the private sector with a background in health services administration and personal injury law administration. In addition to her work with SIN, Shannon holds the additional role of EA to the Toronto Consul General and Director for UKTI, Canada.

China

David Bacon – Counsellor (Science & Innovation) until May 2011

David led the network facilitating co-operation across research, innovation and the use of science to address global threats. He previously led the Higher Education Division and Strategy Unit for children, education, lifelong learning and skills in the Welsh Assembly Government. He has been Director of a policy unit dealing with IT Services, Electronics and UK policy on international R&D, and a British diplomat in Germany dealing with the environment, science and technology. After studying physics at Oxford University he worked at the National Physical Laboratory, gaining a PhD from the University of Bath.

Sam Myers – Counsellor (Science & Innovation) from May 2011

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Sam has a First Class (Hons) Masters of Biochemistry from the University of Bath. In 1999 he worked at the Mount Sinai School of Medicine in New York where his team's findings on protein structure-function analysis were published in Science. In 2000 he was a researcher at the Chiron Corporation in San Francisco.

Sam joined BIS in 2001 as a Fast Stream graduate recruit, working first to grow the UK biotech industry and then on EU science policy and funding. He subsequently became the Private Secretary to the Employment Relations & Competition Minister. After promotion in 2004 he was responsible for biotechnology policy at DTI, before moving to Singapore in July 2007 to head up the Southeast Asia Science and Innovation Network.

Will Hellon – First Secretary (Science and Innovation)

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Will joined the team in October 2009. His work includes supporting UK technology partnering, space science and food research. Before he joined the team he had worked in the International Science team in BIS and prior to that in Defra on such varied roles as science evaluation and procurement, agri-environment scheme management and salmon and freshwater fisheries policy.

Katy Fu – Senior Science & Innovation Officer

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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.

Mary Li – Science and Innovation Advisor

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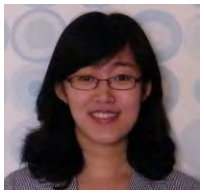
Mary joined the S&I Network in Beijing in February 2011 to cover a colleague's maternity leave. Her current work involves research and reporting on the 12th Five Year Plan. She is also involved in the Joint Commission and Innovation Dialogue preparation. She had previously worked as a university lecturer, a radio producer with BBC World Service and then with Radio Beijing.

Bo Dong – PA to Science and Innovation Counsellor and Office Manager



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Bo joined the S&I network in February 2011. Previously, she worked in the New Zealand Embassy in Beijing. She is responsible for managing the Science Counsellor's diary and visits, facilitating network-wide communications and assisting with reporting to raise awareness of science development in China.

Xindan Jia - Senior Science and Innovation Advisor (currently on maternity leave)

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Xindan joined the S&I team in Beijing in 2009. Previously she worked as a post-doctoral researcher in the UK, then in business development at a start-up biotechnology company in Shanghai. She has a BSc in Biology from Peking University and a PhD in Molecular Biology from the University of Manchester.

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Before joining the S&I Network in September 2009, Richard worked for the FCO advising on Arctic and Antarctic policy. Richard is responsible for all SIN programmes, projects and high level visits in Shanghai and the surrounding provinces. Richard leads within the network on nano-technology and material sciences. Richard is a graduate of Durham University (BSc Environmental Sciences) and Newcastle-upon-Tyne University (MSc Clean Technology). He is a Chartered Water and Environmental Manager and a Chartered Scientist. He recently became a Fellow of the Royal Geographical Society and a Fellow of the Chartered Institute for Water and Environmental Management.

Bronte Zhang – Senior Science & Innovation Officer

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Bronte Zhang works for the UK Government Science and Innovation Network as a senior science and innovation officer at the British Consulate General in Shanghai. Bronte works to assist UK stakeholders to develop science and innovation related activities and collaborations within the East China region. Throughout her career, she has devised and led numerous science projects of all scales covering wide-ranging subjects from nano-technologies to biomedicine, from environmental sciences to aviation engineering. Bronte holds a B.A degree in economics.

Lily Zhu - Science and Innovation Officer

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Lily Zhu has worked as Science and Innovation Officer at the British Consulate General in Shanghai for the last 3 years. She is strongly involved in Science and Innovation events and VIP visits in East China. She also assists the Head of Section to deliver large projects that develop and deliver goals in innovation, particularly within biomedicine, renewable energy, climate change and nano-technology. Her academic major is public administration, and research direction of her postgraduate study is public policy analysis.

Lina Xie – Science and Innovation Officer

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Lina joined the S&I network in September 2009. She is responsible for the delivery of UK's science agenda in Southwest China and the exploration of science collaboration opportunities for the UK. Before joining the team, Lina got her Masters degree in HR in the UK and served in the management section in the British Consulate-General Chongqing.

Ming Liu – Senior Science & Innovation Officer

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Ming joined the network in November 2008 having previously worked within a Chinese Academy of Sciences institute. She works extensively with energy and climate change community in China to co-ordinate joint collaboration activities.

Please note that Ming will soon be joined by a new colleague in Guangzhou, Shirley Huang

Europe

Germany

Kenan Poleo – Regional manager for Central & Eastern Europe

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Kenan joined the Network as Regional Manager for Central Europe (covering Germany, Switzerland, Poland, the Czech Republic and now Turkey) in December 2009. Kenan joined the Civil Service in 2001, heading up teams working on chemical industries, industrial emissions, counter terrorism, civil contingencies and energy policy. He was seconded to Slovenia in 2007-8 as a UK National Expert on Energy. He was the Deputy Director for EU Energy and Climate Change Legislation at DECC before taking up this post.

Ursula Roos – Science & Innovation Officer

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Ursula holds an MSc in Translating and Interpreting from Heriot-Watt University and a Postgraduate Diploma in Economics from the University of London. She joined the SIN in 1996 and has extensive experience in facilitating effective visits and fact-finding missions to Germany. Ursula is an expert on Germany's research landscape, innovation and growth policies, all aspects of the life sciences sector and key emerging technologies such as advanced materials and nanotechnology. She works closely with local partners to identify opportunities for joint activities. Between 2007 and 2011, Ursula has completed an MBA with the Open University. The emphasis of her MBA study and project work was on strategy as well as creativity, innovation and change.

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Heike joined the Berlin Science and Innovation team in August 2004. She has previously worked as an assistant/coordinator for international companies in Germany, Switzerland and Colombia.

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Muzinée Kistenfeger, Science & Innovation Officer in Munich, is a graduate of Munich University and joined the German S&I team in April 2001. She has over 10 years' experience in foreign language journalism including science and education issues. She is the team's expert for Southern German science and research and responsible for contacts to such prestigious research institutions in the area as the Max Planck Society of the Fraunhofer Society or LSFs such as ESO.

Czech Republic

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Otakar took up the newly created post in Prague in October 2003, and developed it to its current well-performing state. He previously worked as a specialist on international projects at Brno University of Technology and as Managing Director of a small technological company, Sincotron. Before that he worked as a postdoctoral research fellow at the University of York, and as a postgraduate researcher at the University of Oxford. He was awarded a Chevening Scholarship in 1996, and a PhD in Biomedical Engineering in 1997.

Switzerland

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Gaby has a background in social sciences. She joined the British Embassy in December 2008 after having worked in the economic and environment department of the Dutch Embassy. She has a broad knowledge of the Swiss scientific, economic, environmental and agricultural landscape.

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Elisabeth joined the Science & Innovation Network in 2009. She is a French national and previously worked in the British Embassy in Paris in the Press and Communications department as Online Communication Manager. In Switzerland, she has so far worked on a number of S&I projects including Sustainable buildings, Food Waste Reduction, Diabetes Type 1 or Nuclear Fission research.

Poland

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Magda Gajownik joined the Science and Innovation Network at the British Embassy in Warsaw in June 2008. She previously worked at the Food Safety Authority of Ireland. Her main project was writing the healthy eating guidelines for the Irish population. She also has two years experience in the pharmaceutical industry in the Quality Assurance department. Magda gained her MSc. in Food Safety at Wageningen University in the Netherlands. During her final year she did a 6 month internship at Unilever R&D in the Netherlands, working on new detection methods of microorganisms in food. She gained her BSc. in Human Nutrition and Consumer Science at the Agricultural University of Warsaw.

Turkey

Başak Candemir - Science and Innovation Officer from July 2011

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Başak Candemir (pronounced Bash-ak Jan-deh-meer) is the newly appointed SIN Turkey officer. Başak has just completed her PhD at the Science and Technology Policy Research Unit, University of Sussex, and has an MA in European Studies on Science, Society and Technology from Maastricht University. She gained her BSc in Chemistry from the Middle East Technical University, Istanbul. Her main interests are in innovation and higher education policies, high-tech sectors and cross-country institutional analysis.

France

Mark Sinclair – Regional Manager (Europe West)

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Mark took up the role of First Secretary S&I in Paris in September 2006, later taking on the role as regional manager for the 'West' region of the SIN Europe team. Prior to this he headed the S&I effort in north-eastern USA as H.M. Consul S&I Boston. His earlier career was spent in a range of research & technology roles in the Ministry of Defence but he also worked for 2 years in what is now GO-Science. Mark has degrees in engineering science and an MBA. He leaves Paris at the end of June to take up the position of Head of S&I India, starting in early August. He is succeeded by Matt Houlihan.

Dr Fabien Deswarte – Senior Science & Innovation Adviser

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Dr Fabien Deswarte obtained his PhD from the University of York in 2006 and graduated from the National Chemical Engineering School of Toulouse in 2002. Before joining the S&I network, Fabien worked for 3 years for the Green Chemistry Centre of Excellence in York where, as part of his role, he coordinated a large biorefinery project (SUSTOIL) funded by the European Commission through the Framework Programme 7.

Alison MacEwen – Science & Innovation Adviser

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Alison MacEwen joined the S&I network in 2008. After graduating with an Honours degree in Modern Languages, she spent two years teaching English in Japan. She then worked for a number of years in the Education and Training Group of the British Council in the UK, managing a European Commission funded student teacher exchange programme and getting to grips with European Union HE issues. Since joining the SIN team in France, with a shared remit for Belgium, Alison has enjoyed the continued opportunities to further develop international partnerships on a variety of themes such as neurodegeneration, cybersecurity and biodiversity.

Italy

Dr Alessandra Ferraris – Science & Innovation Officer

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Prior to joining the Network, Alessandra had 6 years research experience as R&D project manager in a major Italian pharmaceutical company. Before developing an interest and expertise in creative industries and innovation, she co-authored several patents in the field of drug delivery systems.

Dr Laura Nuccilli – Scientific Affairs Officer

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Laura has a degree in Political Science and a Masters in Mass Communication (Leicester University, Chevening Scholar). Prior to joining the Network, she worked in the Italian Parliament as a Parliamentary Assistant with the Green Group dealing with issues such as Sustainable Development, Biotechnology and GMOs.

The Netherlands/Benelux

Liesbeth Bouwhuis – Science & Innovation Officer

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Liesbeth joined the UK S&I Network September 2009 to cover the UK's interests in the Netherlands, Belgium and Luxembourg. She studied Chemical Engineering (MSc) at the University of Twente in the Netherlands and for her thesis worked with Shell in the Hague on site selection for Liquefied Natural Gas terminals, and Shell in Amsterdam on the development of CO_2 capture technologies for CCS in China. She also studied Philosophy of Science, Technology and Society (MA). Before joining the UK S&I network Liesbeth worked as a research assistant in philosophy of technology, contributing to a scientific book on the politics and ethics of new and emerging S&T.

Spain

Sara Cebrián – Science and Innovation Attaché

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Sara Cebrián has an M.Sc in Agricultural Engineering from the Polytechnic University of Madrid. Before joining the UK Science and Innovation Network she worked as an R&D programme manager at the Molecular Biology Centre Severo Ochoa in Madrid and as a strategy consultant at a biotech consulting company.

Sweden

Hazel Gibson – Regional Science & Innovation Manager (Europe North)

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Hazel Gibson has been working in the Science and Innovation Network since 2008. Previously she worked in the Office of the Chief Scientific Adviser (Scotland), and energy policy roles. There she gained an appreciation of the value of science, its application to global problems, and international collaboration. She worked in marketing prior to this, and has degrees in Modern European Languages, and Public Relations.

Denmark

Mogens Olsen – Science & Innovation Officer

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Mogens graduated with an MSc in electronic engineering from the Technical University of Denmark. He has 17 years business experience from Philips Denmark, Philips Australia, RE Technology and Peek Traffic. He subsequently worked two years as investment manager with Danish Development Finance Corporation, responsible for investments in IT, software and electronics. Following this Mogens completed a 5-year assignment as Technology Attaché at the Royal Danish Consulate General in Los Angeles. Mogens joined the British Embassy in Copenhagen in May 2003.

Finland

Science & Innovation Officer

British Embassy
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Finland

Recruitment is in progress for a Science & Innovation Officer to be based in the British Embassy in Helsinki.

India

Chris Darby – First Secretary, Head – Science & Innovation Network India

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Christopher Darby leads the Science and Innovation Network in India and focuses mainly on governmental aspects of the UK's science relationship with India. His clients are predominantly government departments including the Foreign and Commonwealth Office and the Department for Business, Innovation and Skills. Chris has a significant career history in international science policy and his words can be found in many UK and EU publications on this subject in recent years.

Chris will be succeeded by Mark Sinclair in mid-August.

Swati Saxena – Senior Science & Innovation Adviser

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Swati, as Senior Science and Innovation Adviser in Delhi, provides support to UK stakeholders in establishing R&D linkages with India, particularly in research related to food production. She brings strong expertise in agricultural research to the role she took up eight years ago. In a previous industrial role, Swati was part of the core group that enabled commercialisation of India's first genetically modified crop. She has an academic background in genetics.

Dr Rita Sharma – Senior Science & Innovation Adviser

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Dr Rita Sharma is a Senior Science and Innovation Adviser based in Delhi. Rita leads on Environmental Sciences; her work ranges from brokering research collaborations between the UK and Indian researchers to assisting in utilisation of best available science to influence effective policy making. Rita has a Bachelor's in Botany, a Masters in Anthropology and PhD in Cell Biology.

Leena Arora Kukreja – Science & Innovation Adviser

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Leena joined the Science & Innovation Network in 2007. Prior to taking up this role, Leena worked with the Dabur Research Foundation. Leena now works with partners across government like UK Trade & Investment and Research Councils UK Office in India to develop the network's portfolio of innovation-focussed activities. She has an academic background in Biotechnology and has also studied Business Administration and Marketing.

Kinchit Bihani – Senior Science & Innovation Adviser

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Kinchit Bihani works as Senior Science and Innovation Advisor. He splits his time between Delhi and Mumbai. Kinchit focuses on science policy analysis, civil nuclear, ICT and engineering. His past work experience includes varied sectors such as engineering, E-commerce, global governance and climate change. Kinchit holds a BEng from Thapar University, India and an MPhil in Technology Policy from the University of Cambridge, where he was a Commonwealth and Shell Scholar.

Rebecca Fairbairn – Second Secretary, Head of Science & Innovation Network Bangalore

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Rebecca Fairbairn joined the Science and Innovation Network in 2008 as Head of Science and Innovation in Bangalore. A social scientist by training (Universities of Edinburgh and Bristol), she has led on UK government initiatives covering a range of academic disciplines. She is now focused on raising the profile of the UK research base in India. Rebecca is also Deputy Head of Mission for the British Deputy High Commission in Bangalore.

Sunil Kumar – Senior Science & Innovation Adviser

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Sunil has varied interests ranging from aerospace, to the life sciences. He started his career working on ant diversity and behaviour at the Indian Institute of Science. He also worked as a journalist at Deccan Herald, writing on science and environment. Prior to joining the Science and Innovation Network, Sunil worked with UK Trade and Investment as a lead officer for the aerospace sector. Sunil has authored two books and more than 200 popular articles.

Shashi Kalyan – Science & Innovation Office Administrator

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Shashi handles administration & finance for the science and innovation team in India. Shashi has a BSc in Physics, Chemistry and Mathematics, and a Diploma in Business Management. Prior to joining the Science and Innovation Network, she worked at PepsiCo as an Executive Secretary.

Sheryl Anchan – Science & Innovation Adviser

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Sheryl Anchan joined the Science & Innovation Network in 2006. She works very closely with the senior adviser to support the network's initiatives on the life sciences. She also plays an important role in the marketing strategy for S&I in India, which includes raising the profile of UK science and of the network's activities through a range of media including the website and the monthly Science and Innovation India newsletter.

Israel

Dr Adee Matan – Science & Innovation Attaché

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Adee is the Science and Innovation Attaché at the British Embassy in Tel Aviv. In this role, she is responsible for promoting scientific and research connections between the UK and Israel. Adee received her PhD from the department of Brain and Cognitive Sciences at MIT. She also has a BSc in Computer Science and studied Linguistics for her MA. She has worked in product management and R&D for companies in the fields of machine translation, workforce management and e-commerce.

Abigail Tetelman – Science & Innovation Assistant

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Abigail is the Science and innovation Assistant at the British Embassy in Tel Aviv. Being the right arm (although left handed!) of the Science Attaché, Abigail is the driving force behind all of the SIN Tel Aviv activities and achievements.

Japan

Chris Pook – Counsellor, Science and Innovation

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Chris studied microbiology and genetic engineering at Bristol University and Imperial College London before joining the civil service in 1993. He has held a range of posts in science, technology and innovation policy and spent two years on secondment to BG plc. Chris was Science Attaché in Washington from 2001-2004 and appointed to Tokyo as Counsellor for Science and Innovation in December 2005. He will be leaving his post in Tokyo in August 2011.

Kevin Knappett – First Secretary, Deputy Head

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Kevin is a chartered engineer with commercial experience in R&D departments at Nokia (Finland), Nortel and the Defence Evaluation Research Agency. He began his career at the Radiocommunications Agency and progressed to senior radio specialist and then joined the DTI to lead a successful university-business knowledge transfer government programme. Kevin joined the SIN in April 2009.

Yumiko Myoken – ICT and Engineering Team Leader

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Before joining the S&I Network, Yumi was a researcher at the Japan Science and Technology Agency, working on R&D strategies for innovation. Previously she worked at the Ministry of Foreign Affairs and was in Boston to conduct a survey on US science and technology policy.

Seiko Oya – Science & Innovation Officer

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Seiko joined the network in November 1995 as the Project Officer for the ICT and Engineering Team to organize mission programmes, workshops and seminars. She previously worked as technical liaison for a semiconductor manufacturing machine company in Horsham, UK

Ryozo Tanaka – Climate Change and Energy Team Leader

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Before joining the Embassy, Ryozo worked in the private sector on a number of R&D projects in energy, including collaborative projects with the UK, US and France. He also worked as a researcher at the Ministry of Trade, Economy and Industry (METI), looking at the world oil market. In S&I Tokyo Tokyo, he has focussed on CCS, fuel cell, and impacts of climate change, for example, crops, urban areas and forests. Ryozo left the S&I team in Tokyo to move to a new post in July 2011.

Tomoko Watanabe – Project Officer, Climate Change and Energy Team

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Tomoko has been the project officer on climate change and energy since 2008. Her main responsibilities include organising climate change and energy related S&I workshops and missions, and VIP visit programmes, researching and writing monthly news summaries for the S&I Newsletter.

Sachiko Yoshida – Project Officer, Life Sciences Team

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Sachiko joined the S&I Tokyo team as life sciences project officer in June 2009 after spending three years as S&I officer in Osaka. Her major responsibilities include organising S&I projects, contributing to enquiries and report writing, and liaising with UK and Japanese stakeholders.

Miki Kunimura – PA & Event Manager

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Miki Kunimura joined the British Embassy Tokyo Science and Innovation team as Event Manager and a PA to the S&I counsellor in October 2008. Miki's main role is to coordinate visitors' programmes and organise seminars and symposiums. Before joining the Embassy, Miki worked for the British Council Japan and Virgin Atlantic Airways. Miki is currently studying clinical psychology.

Eiko Ishikawa – Programme Fund Manager

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Eiko studied international policy at Kwansei Gakuin University and the University of Georgia. She joined the British Embassy in 2004 and moved to the S&I section in 2007 as PA to the First Secretary. She has a strong interest in the international collaborative nature of the S&I section's work. Eiko is responsible for programme management of the Global Partnership Fund in Japan and coordinates the section's online publications

Ed Thomson – Consul, Science & Innovation

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Ed studied international relations and strategic studies before joining the Scottish Government. He worked on education policy before moving to their office in Brussels to cover research, education and social issues. He moved on loan to the FCO to join the S&I team in Osaka in September 2009 where he is mainly responsible for relationships with institutions in the western half of Japan.

Ed Sumoto – Science & Innovation Officer

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Ed studied Science, Technology and Foreign Affairs at Georgetown University. Before coming to S&I in 2009 he worked for a research group on biochar, small hydropower and clean development in China, and community-based disaster management strategies for the UN in various Asian countries. He is a local community volunteer and has been working with mixed families, children, visually impaired, and immigrants for the past 13 years.

New Zealand

Steve Thompson – Science & Innovation Promoter

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Steve was born in the UK, and has a PhD in agriculture, a Masters in Economics, and is a graduate of Canada's National Defence College and its Queen's University Programme for Public Executives. In Canada, he held Director-General positions in research and biosecurity with the federal government. He became a Senior Fellow in Canada's Round Table on the Environment and the Economy, and Professor of Sustainable Development.

In New Zealand since 1997, he was CEO of its Foundation for Research, Science and Technology and of the Royal Society of New Zealand. He is currently Chair of New Zealand's MacDiarmid institute for Advanced Materials and Nanotechnology.

Russia

Dr Julia Knights – First Secretary (Science & Innovation)

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Julia led the East China S&I section for 3 years before moving to Russia to set up a new S&I Section in 2010. Julia's team focuses upon creating new and enhancing existing world class research partnerships between UK and Russia in Space science under the UK Russia Year of Space 2011, nuclear & particle physics, life sciences, energy efficiency, climate and Arctic science. Previously Julia worked for Defra as Senior Policy Advisor for biofuels, and previously worked in Paris at the French Ministry of Agriculture, researching France's bioenergy policies. Julia holds a BSc in soil science, an MSc in crop protection and a PhD in biogeochemistry.

Dr Marina Sokolova – Senior Innovation Adviser

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Marina joined SIN in 2010 and leads on logistics for S&I Russia's Space Science Café and Expert Innovation Roundtable series across Russia. Previous to this Marina was a Climate Security Advisor at the British Embassy in Moscow. Before this, Marina worked as Head of Science & Technology at the British Council, Russia. Marina has held positions as a scientist in the International Foresight Center of Moscow's Higher School of Economics, and visiting Professorships at the Institute of Zoology, University of Zurich, Switzerland and the School of Biological Sciences, University of Wales, Bangor, UK. Marina holds a BSc in biology and a PhD in genetics.

Southeast Asia

Malaysia

Lee Ching Heong – Science & Innovation Officer

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Ching joined the Network in December 2008 to manage S&I activities in Malaysia. She obtained her first degree in Science from University of Adelaide and subsequently a Graduate Diploma in Medical Laboratory Science from the University of South Australia. She has held a variety of positions in scientific research and administration, both in the academia and the private sector.

Singapore

Matt Crossman – Regional Director Southeast Asia, Science and Innovation

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Matt is based at the British High Commission in Singapore, having joined the Network in May 2011.

Matt was previously responsible for policy development and the implementation of the UK Flood and Water Management Act. He is a chartered civil engineer and has worked in engineering and applied research in UK and Southeast Asia.

Jessica Wright – SEA-EU-NET Project Officer – Europe & SE Asia

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Jessica joined the SIN Network in 2008 and leads the UK's input into the EC funded SEA-EU-NET project, which links the research bases in the EU and Southeast Asia. Jessica is also the key contact for UK collaborations and policy work with Singapore through the UK-Singapore partners in science programme.

Christopher Tan – Senior Science & Innovation Officer

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Christopher joined the Network in May 2005. He obtained his degree in Chemical Engineering from University of Manchester Institute of Science & Technology and subsequently obtained his MBA from Nottingham University and Master in Health Service Management from Flinders University. Prior to that he was working in the private sector and was based in China, Hong Kong and Malaysia.

Mark Anthony – Science & Innovation Officer

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Mark joined the SIN network in July 2011. Prior to this he spent 5 years working in the Middle-East in the airline industry. He has a Diploma in Mechatronics Engineering and a Degree in Business Administration.

South Korea

Dominic McAllister – First Secretary (Science & Innovation)

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Dominic took over as Head of Science and Innovation at the British Embassy in Korea in December 2008. He is responsible for delivery of collaboration programmes under the UK Korea Joint Committee on Science and Technology. Prior to his posting to Korea he worked in London coordinating regional S&I activities for the European Science and Innovation Network. Dominic has been a career diplomat since 1990 and has served in Belgrade, Cairo, Riyadh, Taipei, and Caracas. Dominic trained at King's College London as a chemist and did post graduate work for ICI on polymer catalysis. He also holds a Masters degree in Chinese history and politics. Dominic is married with four children. In his spare time he enjoys travel, reading and sharing good food.

Hyeyoung Kim – Science & Innovation Manager

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Hyeyoung joined the SIN Network in August 2004. She previously worked for Templeton Asset Management Ltd and the Australian Embassy in Seoul.

Hyeyoung is responsible for networking projects on polar research, food safety, life sciences, biotechnology, nanotechnology, low carbon housing, Alzheimer's Disease and basic sciences. Hyeyoung holds an MBA degree and studied in international business. She is married with one child and likes to read good books, eat nice food and enjoys travel.

Dongjune Song – Science & Innovation Manager

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Dongjune is an electrical and computer engineer by training. He completed his studies at Purdue and Cornell Universities in the US. Prior to joining the SIN Network in 2009 he worked for Motorola and Teleview.

Dongjune is responsible for networking projects on IP, ICT, energy and the environment, low carbon transport, space and aerospace, materials and mathematics.

Minji Choo – Science & Innovation Officer

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Minji joined the Science and Innovation Network in April 2011 after working for the Embassy's Press and Public Affairs Section for six months. Minji studied Communications at Pusan National University and has a Masters Degree in International Security from the University of Warwick. Minji is responsible for networking projects on innovation, smart grids and brain sciences. She leads on marketing and general administration. She is the SIN Korea contact point.

Taiwan

Sam Leng – Senior Science & Innovation Officer

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Sam joined the British Trade and Cultural Office (BTCO) as the lead S&I Officer in August 2009. He has a background in information systems, having had a long career working for various blue-chips in the UK and Europe before relocating back to Taiwan in 2006.

Ginell Hsu – Science & Innovation Officer

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Ginell joined the Network in June 2000 having completed a bachelor degree in International Business at Shih Chien University, Taiwan.

Ginell has an active interest in the Life Sciences, and continues to work on matching UK strengths and expertise in this sector to Taiwan's emerging opportunities.

USA

Please note that a new head of the Science & Innovation Network, Sarah Mooney (sarah.mooney@fco.gov.uk) will be in post from September 2011.

Bradley Keelor – Senior Policy Advisor, Science & Innovation

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Brad is starting his third year as Senior Science and Innovation Policy Advisor at the British Embassy in Washington. He covers physical science and innovation issues. Brad also reports on developments in US science funding. He holds a Master's degree from the School of Public Policy at George Mason University and spent several years lobbying for basic research funding prior to working at the Embassy.

Kate Von Holle – Senior Policy Advisor, Science & Innovation

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Kate works in the biological, climate and development science spheres at the Embassy. Kate's previous experience included heading the government affairs department at the American Geophysical Union (AGU), and working as a science fellow at the State Department. Kate received her B.S. in Biology at the College of William & Mary, and her M.S. in Environmental Science and Policy from the University of Illinois.

Chris Ilsley, Head of Science and Innovation, Boston

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Chris recently completed his MBA in the commercialisation of stem cell banking, spurred on by over 10 years experience in the life sciences based around Cambridge UK, working in consultancy and as biopharma sector specialist for UKTI. Chris has now transferred his keen interest in commercialising innovation and translational science to Cambridge, Boston, leading on innovation across the US Network.

Neelangi Gunasekera – Senior Science & Innovation Officer

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Neelangi's background is on Mass Communications and completed her Master's degree with a concentration on public relations and advertising. Previously, she held communications positions at an investor relations firm in Chicago and a pharmaceutical company in Waltham, Massachusetts. Neelangi has been a member of the Science & Innovation Network since 2003.

Dr Laura Maliszewski – Science & Innovation Officer

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Dr Laura Maliszewski holds a BS in Biotechnology from the University of Delaware where she studied the immune responses of plants to bacterial pathogens. In 2008 she completed her PhD in Virology studying the role of microRNAs in HIV infection of human primary macrophages at the Harvard Medical School. Laura's special interests include infectious disease and translational medical research.

Kathryn Brown - West Coast Regional Director, Science & Innovation

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Prior to joining the San Francisco Science and Innovation team in September 2009, Kathryn worked in developing and delivering science, innovation and business policy for HMG. This included developing policy recommendations to improve the competitiveness of medical technology SMEs, and working with the Technology Strategy Board to develop and deliver a £50M business support programme. Kathryn has a BSc (Hons) in Biotechnology.

Maike Rentel - Head, Science & Innovation San Francisco

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Maike joined the SF S&I team in April 2007. After receiving a BSc in Biochemistry from Edinburgh University, Maike moved on to a D.Phil. in Plant Molecular Biology at Oxford, followed by postdoctoral positions in mammalian cell biology at UCSF and plant pathology at UC Berkeley. She also held a short-term fellowship at the National Academy of Sciences in Washington, DC.

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Anne joined the SF S&I team in July 2009. Previous to her work at the Consulate, she worked in Brazil under a Fulbright scholarship researching galaxy evolution. Anne has also held jobs in Chile, Hawaii, and the California Institute of Technology assisting with a variety of astronomy research projects. She graduated in 2007 with an honours degree in physics and astronomy.

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Nick joined the S&I team in September 2010, after 3 years with UKTI's Aerospace and Advanced engineering team. He came from the aerospace industry, where he was a program manager. Nick has a Bachelor of Science in Engineering degree from the University of Pennsylvania, and a Master of Arts Degree in Mathematics from Claremont Graduate University. He is originally from Philadelphia.

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Kacey joined the Los Angeles Science and Innovation team in September 2007. Prior to her work at the consulate, Kacey spent seven years as a high school science teacher working with at-risk student populations. Kacey has a B.S. in Biological Sciences from Cornell University.

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Before her appointment in 2002, May worked with In Vitro Technologies as head of its European office, as a science analyst for a US Law firm, and for the Wellcome Trust. Since 2003, she has also been theme leader for the FCO science team's work in the USA on climate science. May received her B.Sc. in biochemistry and PhD in molecular biology, from UCL.

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Catherine joined the British Consulate-General in February 2005. A German major at The Colorado College, she later moved to Tokyo, Japan to teach English at a private conversation school. After rising to the position of Regional Trainer, she left to work in a Japanese business software company. Returning to Houston in 2001, Catherine worked at the Houston World Affairs Council.

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Prior to joining the British Consulate General, Atlanta, Kerry worked in the pharmaceutical industry, specializing in the research and development of transdermal drug delivery at a privately held clinical-stage pharmaceutical company. Kerry also has significant experience in environmental science and fuel-cell technology, and has a keen interest in alternative and renewable energies. Kerry Norton is an analytical chemist by training and was born in Shoreham-by-Sea, England. She was educated in the United States, earning a BS in Biology and a MS in Analytical Chemistry.

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Hugh has worked with the Science and Innovation Network since mid 2007, leading it through two changes of government department and a Spending Review. He now leads SIN, currently a BIS/FCO shared resource. A key priority for him this year will be exploring new regions, which are of interest to the UK science and innovation community. Hugh is a career diplomat – Foreign Policy specialist and linguist. His specialist areas are the Middle East, International Security and the UK Overseas Territories.

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Patrick joined IKIU in January 2010, having worked with the Science & Innovation Network for a number of years previously as Asia Pacific Desk Officer. He now has particular responsibility for SIN programme, resources and communications. He started his career as a Materials Scientist in the UK Atomic Energy Authority, and was most recently Head of the Programme Office in the Foreign and Commonwealth Office, overseeing the FCO's policy programme work.

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