

Summary of Round Table Discussion held during the visit of Hon. David Willets, Minister for Science and University, to NCL/IISER/Venture Center, Pune, India

Summarized by Dr. Magesh Nandagopal, NCL

(NCL: National Chemical Laboratory; IISER: Indian Institute of Science Education and Research)

Topic of Discussion: Role of the knowledge triangle in economic recovery and growth

Date and Time: 16 Nov 2010, 14.15 – 15.00

Venue: Indian Institute of Science Education and Research Conference Room, 900 NCL Innovation Park, Pashan Road, Pune – 411008, India

Participants:

UK Delegation:

1. Hon. David Willets, Minister for Science and Universities
2. Mr. Peter Beckingham (DHC Mumbai)
3. Mr. Andrew Jackson (FCO)
4. Ms. Lisa Rodriguez, BDHC, Mumbai

India:

- **Government**
 - Dr. S. Sivaram, Director, NCL
 - Dr. Vijayamohan K Pillai, Head, Fuel Cell and Hydrogen Energy Program, NCL
 - Dr. Magesh Nandagopal, Scientist, NCL Innovations
- **Academia**
 - Dr. KN Ganesh, IISER-Pune
 - Dr. L Shashidhara, IISER-Pune
- **Industry**
 - Shri. Pramod Chaudhari– Chairman, Praj
 - Dr. Balu Sarma, CTO, Praj Matrix Research Centre
 - Dr. Naushad Forbes, MD, Forbes Marshall
 - Dr. GP Singh, Senior VP- R&D, Lupin Research Park
 - Dr. Rajendra Lagu, Founder, SINE (tech business incubator) at IIT, Mumbai (Board member of Venture Center)
 - Dr. V. Premnath, Director, Venture Center
 - Mr. Kaushik Gala, Business Development Manager, Venture Center

CHAIRMAN: Dr S Sivaram, Director, NCL

Dr. Sivaram requested Dr. Premnath to moderate the session. Dr. Premnath requested Dr. Sivaram to give his views on the Knowledge triangle being created in Pune and his views on creating value from science and the challenges ahead.

Dr. Sivaram said that the traditional approach to deliver science to the society from research institutions is a linear one and it would be hard to operationalize this model. There are various components in this

chain to deliver science to the society: students, teachers, research institutions, and industry. Students should be exposed to science not just as an academic subject, but through the prism of applications and value creation from science. The research institutions should use newer models to take innovation to the market, shunning the older/linear models. And a vibrant industry is an important component in this chain. Pune city has the advantage that it has a tradition of industry and entrepreneurship. He said that we should build on the right opportunities and people should come together – the challenge in creating this synergy is the challenge of leadership. In this context, NCL-IISER-VC should play a crucial role. Traditionally, public institutions are strong in innovation, and private institutions are strong in creating efficiencies – and by bringing public and private partners together, we can create the needed synergy.

Minister Willets briefed on how in the UK, Prime Minister David Cameron merged University, Science and Innovation departments under a single ministry, and he (Minister Willets) took charge of this ministry. He drew upon Michael Porter's idea of clusters – and how such innovation clusters can be viewed as economic entities which create a low risk environment for high risk activities like entrepreneurship, research etc. And how Venture Center in Pune creates this low risk environment for entrepreneurs by providing lab equipment, office space etc. Also, having many businesses in the same area, allows for entrepreneurs and employees to take up other opportunities if their businesses don't succeed. He said that government could broadly aid these clusters through policy. When scientists are trying to take their idea to the market they need management support, which needs to come from outside and VCs and entrepreneurs can fill that role. And how the UK government through the Technology Strategy Board (much like the Fraunhofer institutes in Germany) supports the development activity before revenue is generated in a business. Where research is carried out by universities, the development work is supported by the Technology Strategy Board, the IP and tax issues could be dealt with through policy. UK has such strong economic clusters (e.g., in Cambridge).

Dr. V. Premnath invited Shri Pramod Chaudhari and Dr. Naushad Forbes for their views on how industry looks upon at taking technology risks and expectations from academia.

Shri Pramod Chaudhari expressed his belief that industry is getting ready for a higher degree of science and research in its plans. He felt that cross-border collaborations would be needed, particularly in the areas where his firm is working in (in chemicals and materials from biorenewable sources) where first of its kind research is being conducted around the world in 2nd or 3rd generation industrial biology. He felt that the existing model of collaboration between US Government and Indian Government (Dept. of Energy) as something to draw upon to build an EU-India model of collaboration. The Joint development model should take advantage of the favourable cost structure to conduct research in India. (May be a Technology Strategy Board intervention could help.)

Dr. Naushad Forbes said that research based entrepreneurship is essential for the country now (as opposed to the linear models of delivering science). There is enough Indian companies who are taking the lead in expanding research in industry, and it is time for linkages to be formed between industry and academia. He felt that India traditionally has a strong under-graduate education system, whereas the graduate education system has to be strengthened. Particularly there is a gap between undergraduate and graduate technical education. He suggested that government policy should not seek relevance for research spending for industry – it should rather seek to create good quality students who could then go on into industry and create value. He felt that there should be connections between clusters (cross nationally, across different areas of work).

Dr. K. N. Ganesh opined that in India, academics and industry have developed parallelly. He spoke about the need to change the mindset of the students – and bring out the relevance of the industry. He said that not many Indian academics are associated with the industry – and this should be rectified by increasing exposure to industry and by a more pro-active association with the industry. And some of these issues should be delivered through the training offered from academic institutions. He highlighted IISER's role and approach to combine training in science and research with some other areas like entrepreneurship, finance, IP law, journalism etc. He also pointed out the new scheme introduced by DBT where the department pays the industry Rs 50,000 a month to have a student over and do an industry project for a few months – to incentivize industry to promote student participation.

Dr. G. P. Singh suggested that there should be more and focused investment by the government in science. He pointed out the need for specialized (industry focused) courses in Indian universities – for example, he pointed out that there are no courses in Medicinal Chemistry offered in India, which would be of great utility for the pharmaceutical industry to get trained professionals. He said that such courses are offered in the UK- and suggested that UK could possibly help set-up such courses in Indian academic institutions. He ended with the note that industry in India has been traditionally very innovative, and the marriage between industry and academics should happen for successful transfer of science and technology to the market.

Dr. Balu Sarma said that more work needs to be done in the area of scaling of technology and commercialization. He opined that the need of the hour is people who think through problem to work with people from other disciplines (both from within the organization and outside) to solve problems. Such (cross organization and cross discipline) collaborations are a must, he said. Also, he said that students trained in India in science lack the experience of working in teams and also in networking, and educators should consider these issues when designing courses.

Dr. Lagu, from his experience as an educator from a technology institute (IIT-B) felt that entrepreneurship education should be introduced early on to students. Knowing the issues involved in starting a new company, the dynamics of a new venture etc. will help students to a great deal. Some of them might not act on it immediately but having been introduced to these aspects early on, they will be able to take to entrepreneurship later on in their careers when they see an opportunity. And another issue he pointed out is the lack of localized case studies/study material for teaching Indian students about challenges in entrepreneurship and technology commercialization. These localized case studies will prepare students to face specifically Indian problems. He stressed that such case studies have to be developed in India.

Minister Willets in his concluding remarks said that in British Universities, there are a range of activities under one roof that is divided in India between several institutions (for ex., under-graduate education, graduate education, research). He said that we must make it easy for students and researchers to move between institutions in UK and India. He suggested that joint doctorate programs could be established between UK and Indian universities. Masters (and higher) level programs could be jointly instituted where the student spends one-year in an Indian university and one-year in an UK university. He agreed with Dr. Lagu that the problem of using US (Harvard Business School etc.) case studies in business schools is less relevant for the local needs – and the UK also faces this problem. He suggested exchanges between business schools and businessmen in India and UK to bridge this gap and jointly explore possibilities.