

**Paper submitted by Prof. Otto Lin to the Academy.
An abridged version was published in SCMP on 5
January 2012.**

Title Back to Basics on Science and Technology Policy

**Otto C C Lin, (Retired) Vice President for R&D of HKUST,
Fellow of Hong Kong Academy of Engineering Sciences**

It is now clear that knowledge is the base of economic strength. Technology, innovation and entrepreneurship have become key factors of prosperity and sustainability. These factors are created by human efforts; they do not deplete like natural resources. Their values increase with more sharing and uses. The wealth creation and societal changes due to computer and internet technology in the last two decades is a vivid example.

This highlights the importance of education and research and development. Regardless of what strategic course Hong Kong may take in the future, building innovation capacity is a common denominator.

There is nothing new or striking about this view. Why repeat it now? I was puzzled by reports on the candidates running for the Chief Executive of HKSAR. One was quoted as wanting to establish a Bureau to promote "cultural industry." The other argued for an agency for the SMEs. Both meant well but appeared to be barking up the wrong trees. Let's go back to the basics: education and R&D.

Political leaders tended to avoid hard issues and opted for easy answers. Indeed, there are certain norms in Hong Kong which make the notion of nurturing knowledge and technology unpopular. Doubts were often raised in three fronts: Hong Kong is just a city, not a country. Hong Kong is too small for R&D. And, Hong Kong cannot compete globally in technology innovations.

In reality, over the past decades, most cities aspiring to world-class standing are making plans and taking actions on its own. From Beijing, Berlin, Boston to Shanghai, Shenzhen, Singapore, any city with an awareness of destiny, have engaged in education, science and technology. In China even second tier cities were encouraged to plan for its own future.

Next, Hong Kong is not really small, just timid. Latest IMD data (The World Competitiveness Yearbook-2011) is quite revealing:

	GDP, Billions US\$	R&D Expenses, Millions US\$	R&D, as % GDP	Population, Millions
Finland	238.8	9,428	3.96	5.37
Hong Kong	225.0	1,655	0.79	7.07
Singapore	222.7	5,228	2.27	5.08
Israel	217.5	8,361	4.27	7.70
Ireland	210.6	3,916	1.77	4.47

Each country listed has a GDP nearly equals that of Hong Kong and similar population. But all have invested much more in R&D, 2 to 5 times, for years. A few comments on the result:

Singapore, a city state, has gained world-wide recognition in developing high tech and international trade. Its expertise in technology parks has enabled it to manage many such parks in foreign lands, thus extending its influence beyond its borders.

Israel, small and surrounded by hostile neighbors, builds its survival and prosperity on developing semiconductors, hardware and software, special machinery and chemicals.

Finally, look at Hong Kong's ability to compete? After 1997, professional talents in Hong Kong have almost tripled and made excellent accomplishments. In the academia, five universities here now ranked among the top 200 worldwide. Further, HKU, CUHK, and, HKUST which is only in its 20th year, were placed as in the top 50's. Hong Kong can take pride in being the city with the highest density of high quality university in Asia, if not the world. This distinction is a far cry from the image of "cultural desert" some fifty years ago. Hong Kong is now an attractive place for Mainland students and scholars world-wide aspiring to higher education and research.

Now is the window of opportunity for Hong Kong to map a strategy for the future in knowledge. Thus the next CE should place focus on formulating a clear policy in science and technology. This, in time, will lead to creative products, simplified processes and efficient management which enhance economic competitiveness.

Some policy issues needed to be debated. These include: What level of government investment in R&D and education should be targeted to bolster our future growth? What governance mechanism for R&D programs should be established to maximize the

effectiveness? How should our innovation system be re-structured and improved? And, how can Hong Kong leverage on the strength and build synergy with the Mainland to enhance the overall global competitiveness? Engaging the community in earnest discussions of these issues will provide guidance to the new Administration and help the future HKSAR. (End)