The National Innovation Summit 2004

As participants in a globalised world economy, we are all familiar with the challenges facing the nation. We know that as the world becomes more competitive and more advanced, success and prosperity increasingly go to those who add value in the global value chain. 'Knowledge' and 'know-how' become the main drivers for economic growth. It is no longer enough to be assemblers or expert practitioners of old methods, as we will surely be overtaken by those with cheaper labour. We need to go to the next level. We need to be developers of knowledge and expert practitioners of more superior technologies.

Therefore, it is vital that we establish and move the nation's innovation agenda forward. I am pleased to see representatives from various institutions attending here today to participate in advancing the agenda. The work to encourage innovation – namely, the process of developing ideas through to commercialisation – requires the capabilities and support from a range of parties. My hope is that all of you will take this opportunity today and tomorrow to raise the right issues and to bring constructive input to the discussion.

Looking at where we are today, it may appear as if our future is relatively assured. According to the IMD World Competitiveness Report 2003, we are ranked as the fourth most competitive economy against countries with a population size of over 20 million. Nevertheless, according to the same report and based on other accounts, we do not perform well in areas related to science, technology and knowledge generation. Malaysia is currently only ranked 24th in the world on R&D spending as a share of GDP. We have seven patents granted for every 1,000 R&D personnel, as compared to Taiwan, Korea and Japan who each have over 220 patents per 1,000 R&D personnel. This could well mean that, while we may be regarded as a success story now, we may not have the capacity in knowledge generation or in science and technology to sustain our competitiveness into the future. Malaysia is thus at risk of

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Keynote Address by Dato' Seri Abdullah Ahmad Badawi, Prime Minister of Malaysia at the National Innovation Summit 2004 at the Palace of the Golden Horses on 29 April 2004.

undergoing long-term stagnation in innovation and economic growth. We need to improve our capacity for innovation and knowledge-creation by addressing the fundamental deficiencies in the country's innovation system.

The first key issue to address relates to 'focus'. Malaysia has been pursuing a diverse portfolio of R&D areas, but we still have some way to go in terms of producing distinctive output. We have carried out R&D efforts in semi-conductor fabrication, telecommunications, aerospace and photonics among others, but the returns have not been very clear. As I have said before, we cannot afford to be a 'jack of all trades and master of none'. Of course, one could argue that results in science and technology take time, but we do need to assess clinically and honestly whether we are spreading our resources too thin.

After all, we have to recognise that our resources are quite limited. As such, I believe we need to be more focused in our approach to innovation. Given the high capital requirements of some technologies, we cannot afford to invest in technologies that will not yield comparatively sizeable benefits. In this respect, our R&D portfolio has to be developed more strategically. Perhaps 70%–80% of our efforts should be focused on three or four priority technology areas, and the rest of our efforts in other areas be allowed to continue merely to allow other ideas to bloom.

The three or four priority areas need to be selected based on our areas of competitive advantage. We should capitalise on our existing areas of strength, for example in electrical and electronic manufacturing or in commodities, biotechnology and tropical medicine. We stand to reap great rewards from enhancing our capabilities in these so-called 'traditional' sectors by utilising more technology and going into more value-adding activities. Of course there is still scope to explore new economic sectors, but I believe that the greatest returns on our investment will be derived from applying technology to our areas of strength. Nowhere is this demonstrated more clearly than in the R&D efforts relating to palm oil.

In the light of this, there needs to be an objective review of our country's areas of competitive advantage. Following from this, we can ascertain which areas will benefit most by an investment in R&D and what types of research we want to pursue. Whatever the final priority areas may be, we must focus and review our innovation efforts through the strategic and social lenses of the nation.

Secondly, in order to enhance science and technology in the country, we need to develop our pool of intellectual capital. Human resource is an area of great concern to me. Much of the success of a society, of an economy, of a country, lies in the capabilities and talent of its people. In a speech I delivered two days ago on my vision for the education system, I talked about the need to nurture and develop young people to reach their full potential, personally and in their careers. I talked about the need for our education system to develop individuals

who can think analytically, creatively and innovatively. The curiosity, inquisitiveness and courage to experiment with new ideas and to develop them are in fact the very foundations upon which a scientific tradition can be built and strengthened in Malaysia.

Nevertheless, innovative and creative thinking alone will not do. We have to develop more qualified, competent and industry driven researchers among all Malaysians. We must also continue to develop a competitive and capable Bumiputera scientific and technological community, able to stand against the best in the world. There is much to be done in this regard. According to the same IMD World Competitiveness Report, Malaysia is ranked 17th in the world in terms of number of R&D personnel per capita. To raise our ratio to South Korea's, we would need to develop an additional 60,000 R&D personnel. As such, I look to universities and research centres to work collaboratively with members of the industry to set up and execute a research and commercialisation agenda in the country. To support this effort, more PhD programmes in science and technology, focussed on commercial output, will have to be developed. In addition, more incentives, financial or otherwise, will have to be given to researchers in areas with high commercialisation potential.

While we would like to fulfil our human capital requirements locally, the reality is that we cannot develop our local talent pool quickly enough to meet the demands of industry. Malaysia will face a shortage of 35,000 skilled workers in 2005, especially in critical fields such as information and communications technology (ICT), science and technology, manufacturing, finance and medicine. In order to bridge the talent gap, we must move rapidly to attract high-quality talent to the country, in areas such as research, design, engineering, sciences, medicine and even management.

Much needs to be done to compete with other countries such as the US, Australia and Singapore who are equally hungry for foreign talent and who are aggressively marketing themselves with comprehensive incentive packages. Malaysia needs to be equally aggressive, or more so, before we lose out. Currently, Malaysia has some incentives in place to attract foreign talent as well as Malaysians working abroad to relocate to Malaysia. But our overall efforts at this 'brain gain' have so far met with little success. For example, I was told that as many as 30,000 Malaysians with tertiary education are currently working in OECD countries. While it is encouraging to hear that Malaysians are excelling in competitive work environments overseas, it is also alarming that we are losing some of our best talents to other countries, particularly when the need at home is so acute.

A concerted effort therefore needs to be made to entice Malaysians abroad to return, or to tap their expertise in other ways. That said, we cannot simply appeal to their sense of patriotism, to cultural or family ties to get them to return. We need to offer a working culture and a living environment that will

enable them to flourish. I believe that the time is right and the conditions are ripe to allow for this to happen in Malaysia. I am confident that given the right working and social conditions, Malaysians overseas would be willing to return. For those who have settled permanently abroad but nevertheless still want to contribute to Malaysia's development, virtual knowledge networks can be created to enable knowledge to be transferred without the need for their physical presence.

As such, I have directed that a comprehensive, yet targeted, 'brain gain' programme, one that attracts so-called knowledge workers – Malaysian and foreign – in critical economic areas be developed. To start off, I have asked the Minister of Science, Technology and Innovation to look into this matter quickly. I believe that he is in the process of drawing up a paper on the development of a 'brain gain' programme for the country, which should be tabled to the Cabinet soon.

Ultimately, our goal in science and technology must be to enhance the country's national innovation system. The innovative capabilities of the individual component parts of the system – the universities, research institutes, industry, funders and the public sector – must be improved. Beyond that, we need to ensure that the linkages between the different component parts are strengthened to fully utilise these enhanced capabilities.

The objective of enhancing the national innovation system is of course to enhance the quantity and quality of products derived from R&D conducted in the country. In this regard, we must tackle the deficiencies present in the country's commercialisation process. It is a fact that a high proportion of research conducted at universities and primary research institutes are not output-oriented. Out of over 5,000 R&D projects in the 6th and 7th Malaysia Plans, only 14% were commercially feasible, while 5% were actually commercialised.

It goes without saying that the usefulness of research is limited if the findings cannot be utilised for the benefit of society. For instance, the mapping of the oil palm DNA sequence achieved by the Malaysian Palm Oil Board (MPOB) recently will only be useful if the genetic information discovered is used to develop better and higher-yield oil palm trees.

Therefore, the effort to enhance our national innovation system can only come about if we look at the root cause of our low commercialisation rate and address those root causes comprehensively. The main hurdle we face appears to be the low commercial awareness among our researchers. Many local researchers do not have the right mindset of linking their research to output. These researchers either lack the courage to develop their ideas beyond the laboratory walls, or cannot develop their ideas into useful applications. Researchers need to realise that they play a pivotal role as they start the whole innovation value chain. We

can give them the support they need to overcome their fears of failing, but they must believe in themselves first.

The onus of ensuring ready-demand for R&D output, however, does not lie with researchers alone. SMEs and industry also need to provide input into the research agendas of universities and research institutes. There needs to be stronger connectivity between researches and research users. The oil palm sector is one example of good R&D and commercial connectivity. The sector's commercialisation rate of 12% is far higher than the national average of 5%.

Another root cause of our low commercialisation rate is said to be related to funding. Currently there are a number of seed-funds available in Malaysia. However, there is a lack of pre-seed funds (such as the cradle investment programme) to aid researchers in establishing proof-of-concept. My government is prepared to create more funding avenues, whether they be pre-seed, seed and other types of funding. However, researchers and entrepreneurs need to play their part by ensuring that their ideas are market-driven, as like all other investors, the government would like to see good returns on their investment, too.

For ideas that are commercially viable, a common stumbling block to commercialisation is the lack of clarity around Intellectual Property Rights (IPR) and spin-offs. For example, it is not clear who owns the intellectual property of a research breakthrough achieved by a university professor. In the event that this research is commercialised, it is not clear how the profits derived should be split between the professor and university. As such, intellectual property right is an area that needs to be reviewed and updated in line with IPR developments around the world. We need to set intellectual property policies that will make it attractive to innovators to take their ideas further.

Most R&D projects probably do not get past the early stages. To jumpstart the current low commercialisation rate, we need to create an environment for ideas to flourish. For this purpose, I propose the setting-up of a centre for creative ideas at the Ministry of Science, Technology and Innovation. People will be able to come to this centre with ideas to get them commercially evaluated and developed. This centre would provide skills, such as mentoring, and resources such as prototyping facilities to aid the process. Innovators can also be put in touch with other innovators to bounce off ideas or to form partnerships. The support provided would be with the objective of helping ideas to go beyond concept to reality, provided it is practical and viable.

Science and technology has long been on the government's agenda to drive the nation's growth and development. Consequently, a number of government agencies and councils were set up to cover the breadth and depth of science and technology. Furthermore, as new technologies developed and as the number of technology areas grew, these agencies and councils had to become more specialised and dedicated. This worked well in the past. However, given that we

are a nation of limited resources, and given that we need to provide greater coordination between the various agencies and councils to move forward, I believe that we must rationalise and streamline the various bodies to make them more cohesive and effective.

That is why I have re-organised some of the related government agencies to put them under the auspices of the Ministry of Science, Technology and Innovation during the recent Cabinet portfolio restructuring. I trust Dato' Jamaluddin Jarjis will study all the 17 agencies under him even further, with a view to reducing the overlaps and increasing their effectiveness.

Furthermore, I would like to announce that the government will form a National Innovation Council that I will chair, to look at rationalising and strengthening the national innovation system across all technology areas. This council will bring most of the other science and technology-related councils together to resolve issues and ensure that we can share best practices and lessons learnt from the respective technology areas. To enhance the workings of the council, a working committee will be formed, headed by the Minister of Science, Technology and Innovation himself. It is my fervent hope to see the National Innovation Council become an effective mechanism to draw up and execute our plans for science, technology and innovation. The Council will harness the views and input of policymakers, researchers, industry representatives and academics from within and outside Malaysia, to ensure that our plans and policies continue to remain relevant and practical.

The issues to be discussed at this inaugural summit are critical for Malaysia's future that is why I personally directed that this conference be organised. Indeed, we require greater innovation and stronger science and technology to enable Malaysia to ride the next wave of economic growth. As such, it is important that we gear ourselves up to take the innovative challenge, so as to not be left behind. To achieve this, we must sharpen our focus and deepen our technological and commercial capabilities.

I firmly believe that innovation should not be confined to scientists and the industrial giants. Innovation is something that we all can, and should, think about to improve our daily lives. For example: Innovations in agro-based areas should be conducted to improve the livelihood of many rural folk. Innovation in schools should be pursued to nurture the creativity and inquisitiveness of our young. Small and medium-scale enterprises (SMEs) should gain access to more technological and engineering expertise to enhance their operations. Corporations should utilise science to sharpen their competitive edge and provide better goods and services to consumers. In short, all levels of society can derive much benefit from innovation, whether directly or indirectly.

Indeed, we can make great strides in our innovation agenda if we can ensure that the entire innovation eco-system is effective. The creation of a vibrant and

productive innovation system is something that will require the concerted effort by many groups. Parts of our innovation eco-system are in place. However, unless we take specific actions to rectify the shortfalls, we are not going to achieve the rate of progress that we need in order to be competitive. My oft-repeated aspiration of making Malaysians 'creators of technology and not just consumers of technology' is not mere rhetoric, but an imperative for the nation. I therefore urge all participants of this summit to make a strong start to the innovation agenda, to enable Malaysians to make the next leap in development.