

DIRECTION OF SCIENCE, TECHNOLOGY AND  
INNOVATION POLICY IN THAILAND

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## I SCIENCE, TECHNOLOGY AND INNOVATION (STI) POLICY FOCUS

Ours is a changing world and the changes are being brought about by various factors – technology, innovation, people and so on. In Thailand, as in many other countries, the ageing society is an issue. At the moment, we have about 10 per cent of the population classified as ageing, and this would double in the coming 10 years. As a society, it is our responsibility to see how science and technology (S&T) could help address this issue in its many dimensions – how S&T could ensure good quality of life to the ageing population, how S&T could be deployed to retain some of the productivity of the ageing people and so on.

An ageing society also means a declining labour force. At present, Thailand has six working people to take care of one aged person; this could reduce to three in about a decade or so. That is, in another 10-15 years, there will be less people to feed the country. How can S&T be used to address this uncertainty? How can the available labour be made more productive?

The obvious decline in the number of young people – owing to changing family structure, late marriage, delayed production of children, increasing rate of divorce, etc. – is another major issue. How do we increase the capacity of the young people when we have less of them?

In countries like Thailand, which are predominantly agriculture-based, a major challenge is how to increase agricultural productivity to feed the nation and, if there are surpluses, the world. Calculations have shown that Thailand alone has the capacity to produce adequate food for 250 million people, and the country's current population is only 67 million. So, if Thailand could realize the full potential of food production through the use of S&T, it would have markets all around the country.

Thailand is a net importer of fossil fuels, spending around 10 per cent of its gross domestic product (GDP) each year to buy fuel from the Middle East. The reduction of this outflow is a challenging issue for the country in the next decade. There are many ways to do this, and all of these require application of S&T – to increase energy use efficiency, to harvest renewable energy, to exploit nuclear energy and so on. The country needs to examine these options and narrow them down to the most suitable ones, and invest in S&T development needed to exercise those options.

A related issue that needs consideration is the climate change associated with energy use. This will be discussed at the United Nations Climate Change Conference in Cancún, Mexico, later this year.<sup>22</sup> There will be negotiations on technology transfer as relating to the adaptation to and mitigation of climate change. Asia-Pacific countries need to take a well-considered position, to avoid being a net importer of climate-changing technologies. We need to start on S&T development forthwith in this regard.

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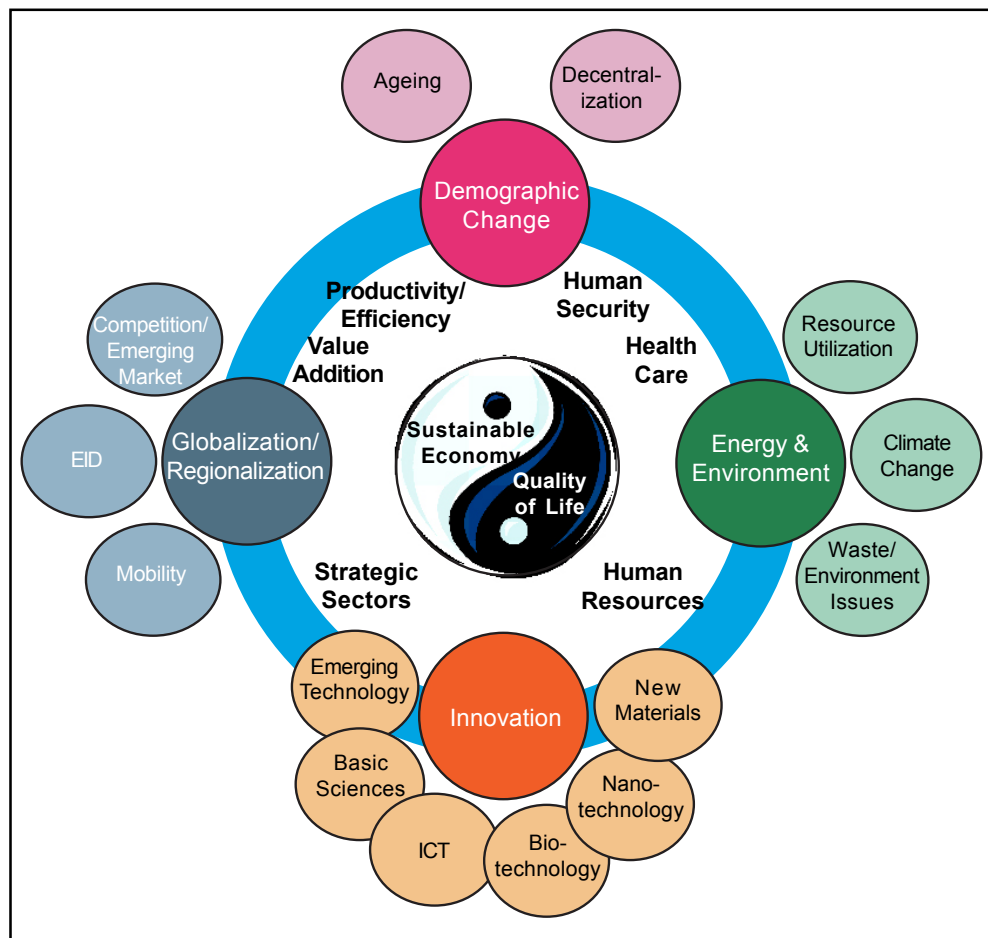
<sup>22</sup> The 16th session of the Conference of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC) and the 6th session of the Conference of the Parties serving as the meeting of the Parties (CMP 6) to the Kyoto Protocol – 2010 United Nations Climate Change Conference, for short – was held at Cancún, Mexico, from 29 November to 10 December 2010.

In the field of information and communication technology (ICT), much would depend on how we can gear our society so that the youth can better utilize ICT, not only for a better lifestyle but also for their careers, in the rapidly “globalizing” world.

Thailand, and some other countries that are represented here, is entering a stage wherein the governance of the country is moving towards decentralization. If we can install S&T in such a way that its development could be decentralized to districts and villages, then the country will do better.

At the moment, Thailand is assessing how it can exercise its S&T development policy in the coming 10 years. There are many issues and challenges before the nation; but for a policy to be effective, it cannot attempt to address everything, especially because of limitations imposed by lack of resources. We have identified four key drivers (Figure 20) that would have a big impact on the future of Thailand. These are: demographic change; energy and environment; innovation; and globalization/regionalization. There are some issues that would have a bearing on these key drivers.

**Figure 20: Framework of National STI Policy & Plan, Year 2012-2021**

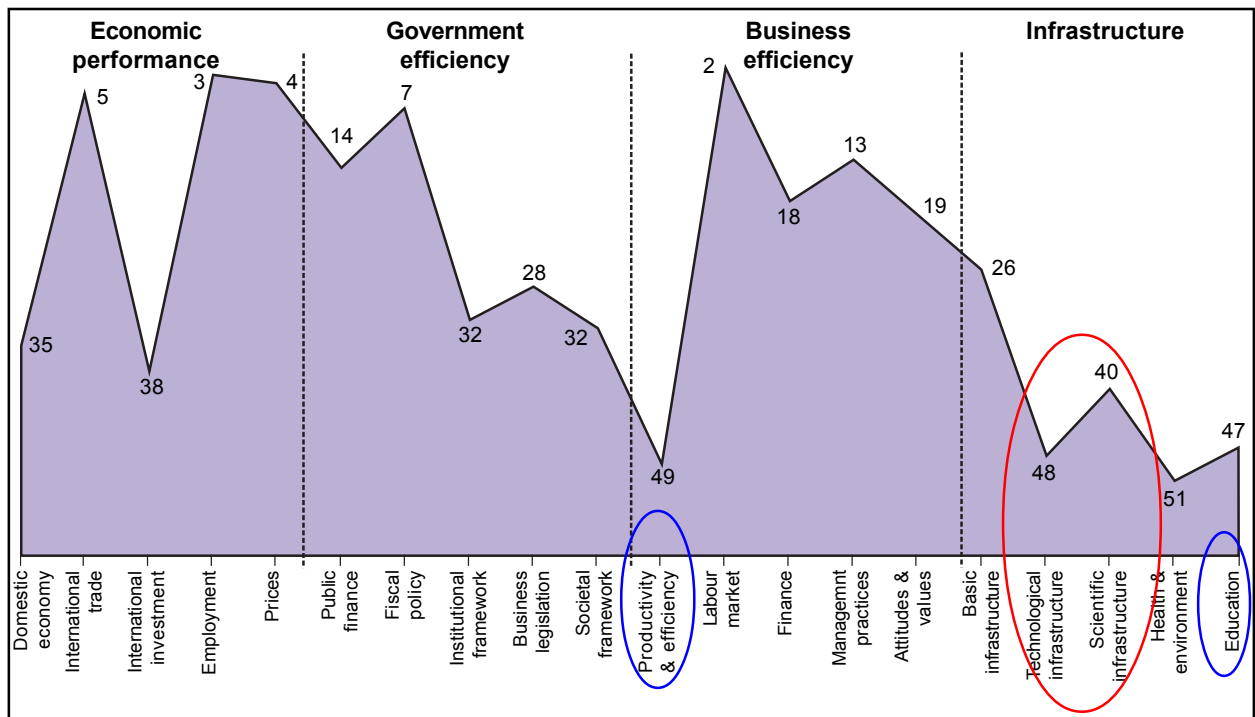


In the year 2015, the member countries of the Association of Southeast Asian Nations (ASEAN) are coming together as a single economic, social and security community. Thailand has to prepare itself for this, as there would be several issues that would need

to be addressed. For example, once we become one community, there would be free flow of labour, scientists, knowledge and technology. How do we deal with this? We need to determine what we need to do and in which areas we can cooperate with other countries of ASEAN.

When we think of S&T for economic development, we need to ensure that it is for sustainable development. Considering the development path that the country had adopted in the past, the word ‘sustainability’ has become crucial in that it is necessary now to think of economic development that also ensures social stability. If there is no social stability, economy cannot make any meaningful development. Therefore, in the next phase of economic planning, we need to balance the development of the business sector with the development of the social sector at the community level, in terms of livelihoods, employment opportunities, lifestyles, poverty reduction and so on.

**Figure 21: Thailand’s competitiveness (2010): major factors**



As a country, we also need to assess critically how we fare in terms of competitiveness (Figures 21 and 22). To understand and improve on this, however, we need to examine all linkages, such as to education, to labour productivity, etc. We are lagging in terms of S&T infrastructure (Figure 22); but improving the infrastructure alone will not increase our competitiveness. Our investment in research needs to increase. The private sector needs to be encouraged, through policy measures, to invest more in research. We need to increase the number of S&T personnel and improve their quality as well.

We are now focusing on three aspects to improve Thailand’s competitiveness (Figure 23). The first is to increase government investment in research and development (R&D): the gross expenditure on R&D (GERD) needs to be raised to 1 per cent of the gross domestic product (GDP). The second is to improve the quantity and quality of our S&T

Figure 22: Scientific infrastructure Asia-Pacific ranking

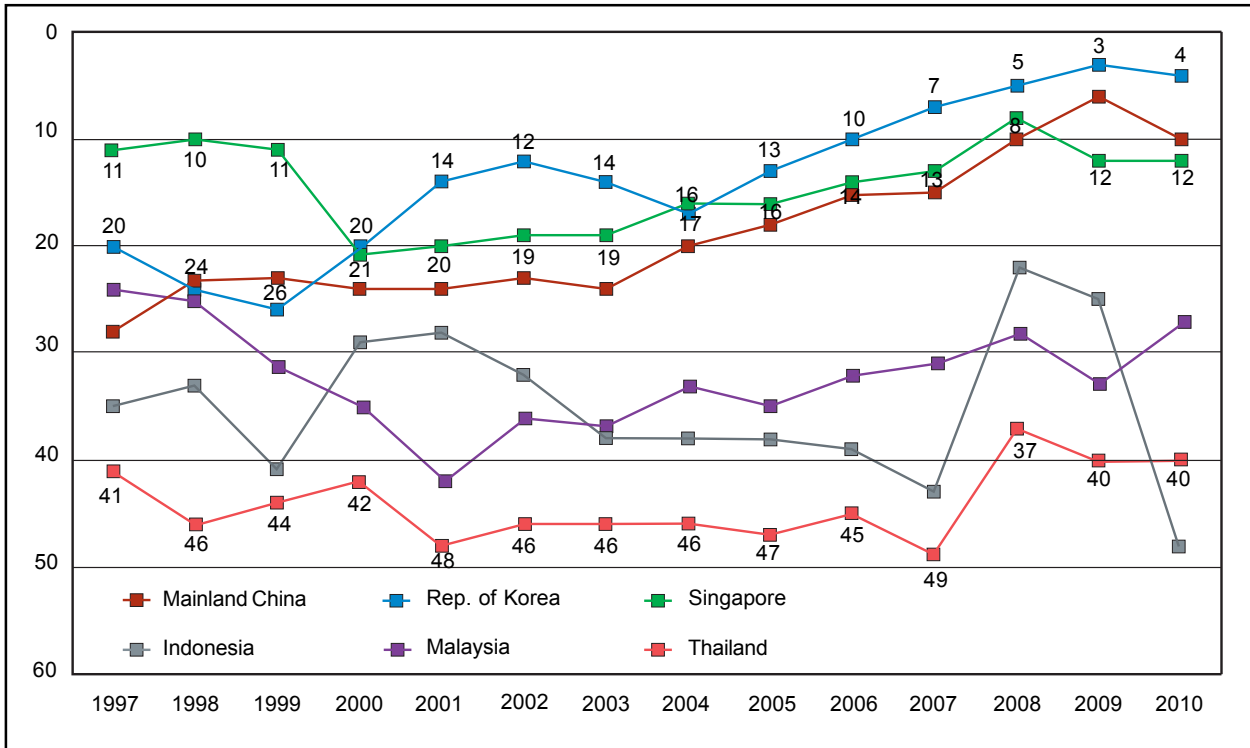
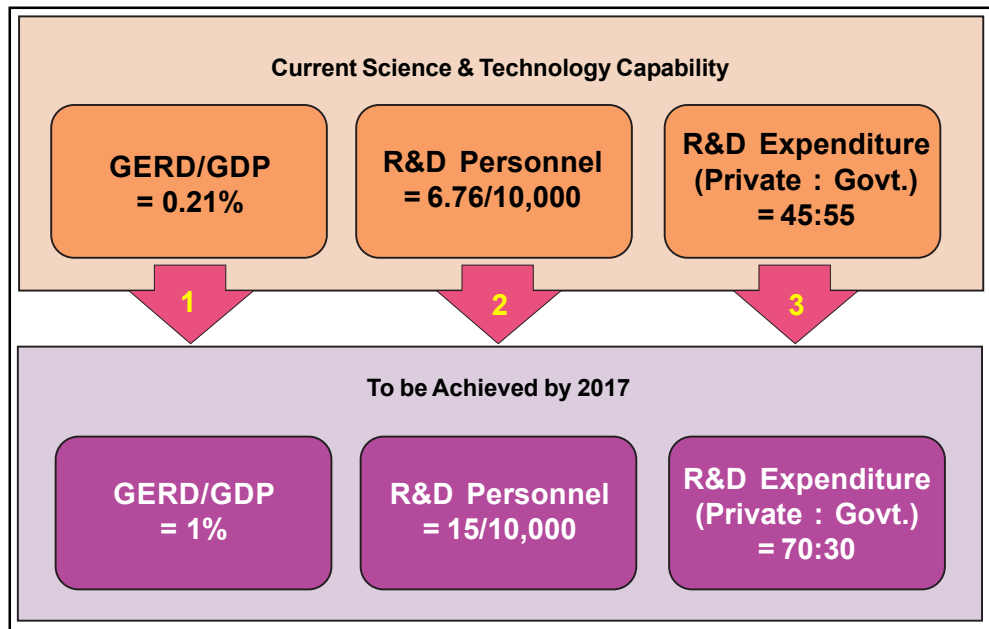
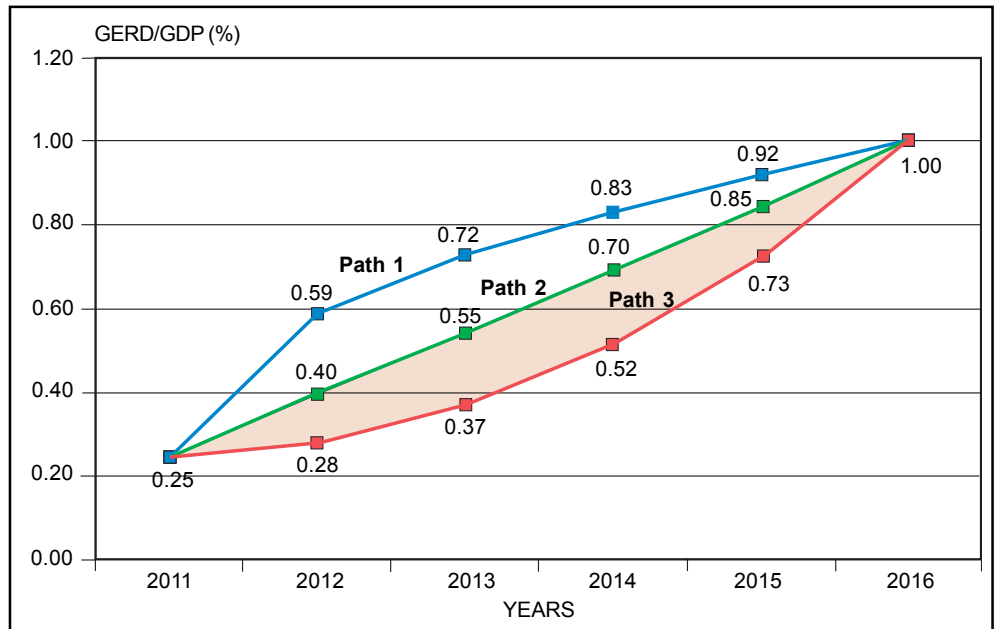


Figure 23: Measures to improve Thailand's competitiveness



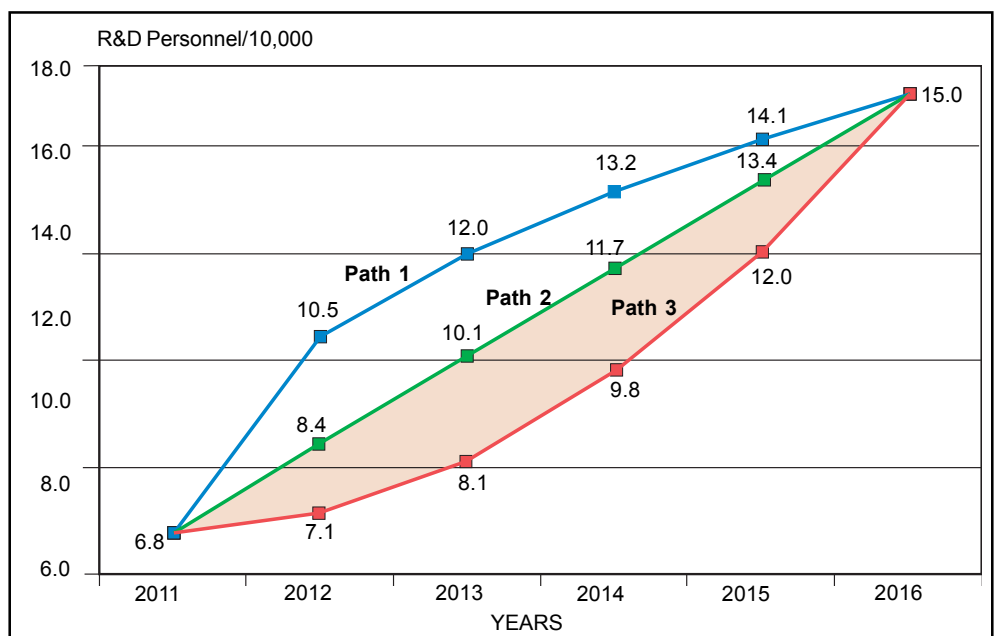
human resources. We are aiming to increase the 6 researchers per 10,000 population to 15 per 10,000 in the coming few years. The third is to encourage the private sector to invest more in R&D. Policy-wise, the government sector needs to be more of a facilitator rather than be engaged in research. Traditionally, the government sector has

**Figure 24: Path to increased expenditure in R&D**



had more difficulty in commercializing research results. Therefore, the government would do well to use part of the budget to promote R&D in the private sector. Furthermore, this would increase employment in the research sector and be an encouragement for the youth to study S&T.

**Figure 25: Path to targeted number of R&D personnel**



Figures 24, 25 and 26 provide graphic representations of what we plan to do in the short and long terms. For instance, we would require tax incentives schemes for the private sector, more systematic organization of research framework for efficiency and

effectiveness, technology transfer schemes, government procurement policies, national projects that would pool the research activities, major S&T infrastructure such as science parks, etc.

**Figure 26: Demand-driven strategy for developing competitiveness and capability**

