

Bangkok Post
30 March 2011

SCIENCE DEVELOPMENT

Thailand urged to lean more towards pure research

PARISTA YUTHAMANOP

Thailand has strong research and development in applied sciences which will help solve commercial problems, says David Dent, a British biotechnology expert.

The local R&D circle is based mostly on needs to solve market problems. It is contradictory to the practice in some West-

ern countries such as the United Kingdom where pure science research dominates.

But Dr Dent said Thailand might want to improve pure science research to create radical change, even though it is strong in commercially focused applied research that generates huge economic value.

"I'm impressed to see what is happening at the NSTDA [National Science and Tech-

nology Development Agency], its market-focused approach and the dynamism of people and young scientists who really look to address business problems," he said.

A comparative example between the two models may be found in research on plants' nitrogen uptake in order to reduce fertiliser costs. The pure research approach

looks at how to improve plants' root systems and the efficiency of nutrition uptake to create plants with a better root structure.

"You will want to maximise the nitrogen uptake and create genetic manipulation for a new plant that can fetch nitrogen from the air that has bacteria with it so that you don't need to add fertiliser," said Dr Dent, who was part of a UK business delegation that held a workshop with local firms, which was organised by the UK Embassy.

"The applied research recognises the problem and the need to increase the efficiency of nutrition uptake and look at the price of nitrogen. Applied research will want to find ways to reduce the nitrogen component in fertiliser. The nitrogen is found in natural gas so its price fluctuates. So do food prices."

Applied research might go on to reduce nitrogen dioxide, a greenhouse gas and nitrate that pollutes water. It will look for innovation that solves all these problems while improving crop yields.

Dr Dent said that Thailand might be able to lift the capability of its R&D significantly if it puts more focus on pure research. Lasers and personal computers were created through pure research, but they later changed the whole industry. On the other hand, the UK could learn from Thailand and its focus on market-based research.

"The Thai research mostly answers to specific market needs. It is the other way

round in the UK which has difficulty in transforming pure research to products that have commercial value. But in Thailand, there isn't enough pure research to draw on."

The key to developing applied research is identifying the gap and develop research and subsequent products to meet the needs. Still, many countries have problems applying technology gained from applied science research into practical use.

"Increasingly, governments around the world have changed their policies. A question then is how to define gaps in the market," Dr Dent said.

Many countries, not just Thailand, have difficulty striking a balance between pure and applied research. China is trying to strike a balance of both.

"Thailand is very focused on addressing R&D for economic needs. The government automatically turned to applied research, instead of pure research that can generate radical innovations," he said.

"The UK boasts the most efficient R&D spending based on numbers of scientific journals, but it has difficulty translating them to commercial uses. The past 50 years saw 40% of worldwide innovation taken up from the UK. What we are trying to do is to go downstream and become more market-based."

Dr Dent said international competitiveness ranking agencies were biased in favour of pure research and that might explain why Thailand performed poorly on the R&D scale.



Dent: Radical change through pure R&D