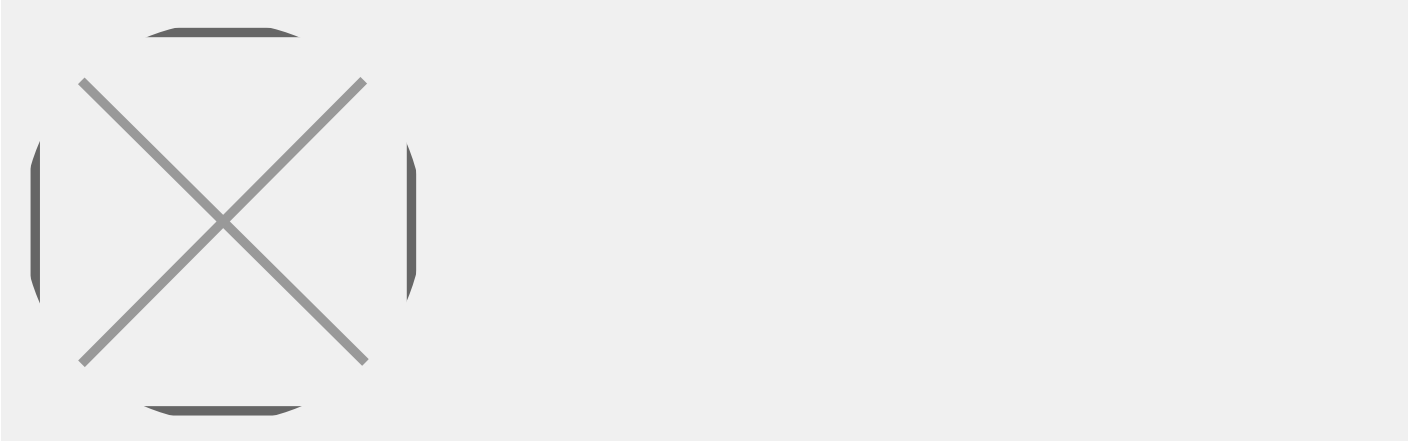
# Interview with Kanyawim Kirtikara, Executive Director, BIOTEC Thailand



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**As one of the figureheads of the BIOTECh industry in Thailand, could you introduce your background to our readers?**

I was trained as a biochemist in Thailand, and did my Master's Degree and PhD in the US at the University of Connecticut. I did two post-Doctorates, one at Rutgers University and one at Tennessee University, after which I returned to Thailand to start 'real' work at BIOTEC, starting out as a research scientist.

When I started with BIOTEC it was a small government outlet under the umbrella of NSTDA. At that time, the role of BIOTEC was to promote R&D in Thailand, to conduct research and to transfer technology. At that time, the national center would support the funding and would conduct the in-house research itself as well as promoting human resources development in the field of biotechnology. As each national center and the NSTDA expanded, a major change happened about five years ago [2008], when the funding part of the NSTDA was removed from the national centers and instead placed at the NSTDA. Now the funding and research conducting activity was separated, so that the centers can fully focus on research. But the mission is still the same: we do R&D, infrastructure development, and human resources development. Each national center within the scope of NSTDA has the duty to promote a platform for technology. BIOTEC for instance set up the genome institute, so that we can promote genome technology and functional genomics research.

**Helped by its biodiversity Thailand is one of the hotspots for the global biotech community today, and the National Policy Framework set up in 2004 set high goals accordingly. Looking back, what have been the results of the Framework compared to the expectations?**

The first framework ran from 2004 to 2009 and had several major goals from turning Thailand into the kitchen of the world to promoting Thailand as a hub for health care. HR development was another main focus, as it is the foundation for everything else to develop from. The percentage of researchers in Thailand in comparison to developed countries is still relatively low, especially when talking about biotechnology.
Also, at the time we wanted to promote private companies in Thailand. After the first Framework was completed, we evaluated the first five years. During 2000-2009, 120 new biotech companies were established. The growth rate 10 percent was found before 2004 and increased to 15 percent afterwards.

The roadmap was first set to end in 2011 at the earliest stage but the timeframe had been moved to 2009 when the framework was presented to the National Policy Committee.

Currently we are drafting a second framework that will run from 2012 to 2021. The new framework aims at specific target groups: rural communities, SMEs, large biotech companies, and the R&D community.

**Mr Shatar of the Malaysian Organization of Pharmaceutical Industries told Focus Reports that most of the developments in biotechnology are being driven by agriculture rather than pharmaceuticals. What are the main drivers in the Thai context and where does life science fit in?**

The situation in Thailand is similar to the one in Malaysia: the main growth driver is in agriculture. It is easier for the agricultural sector to conduct biotechnology and start R&D, as Thailand has many large and export oriented agricultural companies. Smaller companies usually do not have their own R&D staff, so they collaborate with research institutes such as BIOTEC, or with universities, to get a competitive edge.
In terms of life sciences, we see more companies that are providing biotechnology related services, for example stem cell technology and diagnostic technology. Activity in major small molecules is limited at the moment, but I see much potential for biologics in proteins and vaccines.

**Last year for example we witnessed a significant step in dengue vaccine development when BIOTEC licensed dengue vaccine candidates to BioNet-Asia. What other projects in the current BIOTEC pipeline do you have good hopes to be commercially viable?**

There is a pipeline along the way, because what we license to BioNet-Asia still has to go through animal testings and it still has a way to go. The scientists are now working on the next version to

have the pipeline ready for more new products.

**When we met Dr. Morakot in 2007, she told us that with all the top guys united in the National Policy Framework committee, he could really push to make things happen, and he cited the gvt support in setting up a biopark to rake in FDI. How successful has BIOTEC been since in making biotechnology a key area for investment for the country?**

The Board of Investment (BOI) is very important in this. The BOI set up a special policy providing maximum incentives such as 8-year tax exemptions for six categories of biotech business. Right now Thailand does not have much venture capital, so the government has a very useful role in attracting capital investors through tax exemptions.

The Science Park was in its first stage of development when you met with Mr. Ms. Morakot in 2007. At the end of Phase I, most spaces for private companies were filled up. Sixty companies have a home here currently, half one-third are biotechnology and related companies. As a national center we conduct research with these companies and support them with R&D.

While the Science Park currently has a waiting list as it lacks space to accommodate new companies, a sizable new building is erected under Phase II which will double the usage space compared to Phase I, with which the Park aims to attract 200 more companies.
In terms of infrastructure development, BIOTEC and KMUTT jointly established National Biopharmaceutical Facility (NBF, http://www.nbf.kmutt.ac.th/) as Thailand's prime manufacturing site for biopharmaceuticals. The unit serves as a center of excellence in science and technology to ensure self-reliance in the country for the production of drugs, vaccines and other high-value biomedical and biopharmaceutical products. Right now it is in the process of being equipped, and the first module will open very soon. The facility, based at KMUTT Industrial Park Center, will have the dual purpose of serving as a training ground to build up Human Resources and as a centre for transfer of knowledge from the lab to the real industry, while it will also be a launching pad for industry from abroad that would like to come to Thailand and establish a small production plant.

**One of the key factors determining the degree to which a country adopts biotechnology is the availability of qualified human resources, Does the Thai educational system have what it takes to deliver the top notch quality researchers needed?**

Thailand uses a different model compared to Singapore. Rather than spending large sums to attract big scientists from abroad, Thailand chooses to build up the capacity of its people. The government is very supportive in giving out scholarships to support the cream of the crops to study abroad for Bachelor's, Master's, and PhDs, with the requirement that they come back to work in Thailand after completion of their studies.

A different measure is the Royal Golden Jubilee Program set up by the Thai Thailand Research Fund, which supports students to do PhDs in Thailand. There is also money set aside for that scholarship to send students abroad for up to a year. Thai professors establish collaboration with professors abroad to create placements, thus spending less money while still providing students with training from both sides and providing the exposure to foreign education. This encompasses various fields, with BIOTEChnology playing a strong role.

Another NSTDA program is called the Teachers Thailand Graduate Institute of Science and Technology, with the purpose of bridging the gap between research agency and university.

Furthermore, an NSTDA program called the Thailand Graduate Institute of Science and Technology (TGIST, www.nstda.or.th/tgist), with the purpose of bridging the gap between research agency and university. The program provides master's and doctoral degree scholarship to Thai student, with the thesis/dissertation conducted in a NSTDA lab (biotechnology, material sciences, computer science and IT and nanotechnology) under the joint supervision of a university professor and a NSTDA scientist. Every year, BIOTEC has about 20-25 TGIST students working with our scientists.

All these various schemes help to structurally build up human resource capacity in the biotechnology field.

**Continuing on the international perspective, Singapore and Taiwan are known for their focus on biotechnology, while Malaysia is reaching the forefront as well. How do you assess Thailand's positioning and competitive edge on the regional map in terms of R&D?**

Thailand is very well located and we are actively extending our relations with neighbouring countries. Taiwan and Korea are more advanced, partly because they had a very strong ICT base to begin with on which they could turn to biotechnology quite easily.

Thailand, Cambodia, Vietnam, Laos and Myanmar share a strong agricultural base. Within this group Thailand can look at itself as an R&D training hub for its neighbours. For instance, Thailand has a human resource training program in biotechnology started in 2001 with Cambodia, Vietnam, Laos, and Myanmar, allowing their scientists to come work in our lab for three to six month periods. (http://www.biotec.or.th/en/index.php/international-collaboration/hrd-program)

Funding initially came from the ASEAN foundation, but later BIOTEC was happy to fund it from its own budget as we see it as an excellent way to build up relationships with neighbouring countries. Each year we select 10-15 scientists on a competitive basis, and we extended the program to cover the whole of Asia Pacific, up to Mongolia and the Fiji Islands! We follow up on the participants' progress after completion, and the majority continues with an excellent career. Several research collaborations have resulted from this Program, such as a joint research on insect-

pathogenic fungi with two institutes in Vietnam, molecular rice breeding with Mekong-region countries (Laos, Myanmar and Cambodia) and an animal vaccine research with Vietnam.

We build up a quality network through this program and it leads to good relations with our neighbours. This is the kind of initiative that shapes the image of Thailand as a supportive friend, which is highly valuable for future cooperation. Strengthened regional cooperation also offers the possibility to create leverage on an international scale.

**Thailand is very strong at phase 3 & 4, while we would also like to see more phase 1 && 2! What is the potential for Thailand to develop this capacity?**

Several things have to be taken into account. In biotechnology we talk about setting up the biotechnology fund from a higher level to bridge the gap between upstream and downstream by translating research. That is built into the condition of the second National Policy Framework, as it is especially relevant for biotechnology, where more time is needed to reach maturity and the success rates are modest.

In terms of promoting the industry, the Office of Science and Technology is talking about adding several schemes, for example to allow Thai scholars that return from abroad, usually destined to come back to work for the government because of the scholarship obligations, to work directly for the private sector in an effort to better divide resources between government labs and industry.

**Where would you like to take the operations of BIOTEC in the next five years?**

I would like to see more Thai companies turn to biotechnology to boost their competitiveness. There are a lot of small companies interested in using biotechnology, but they might lack some funds to begin with. Companies can take advantage of Thailand’s strong human resource and infrastructure foundation.

**What is your final message to the readers of Pharmaceutical Executive on the commitment of BIOTEC the company to make sure that Thailand is the face of biotechnology in SE Asia?**

BIOTEC is strongly committed to developing and promoting Thailand’s biotechnology. With AEC integration approaching, we are hoping to be the strong facilitator of biotechnology not only in Thailand, but in South East Asia. We have already built up good relationships and are well on our way to realizing this.

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