

## A science giant rises out of the rice fields

Hot on the heels of Taiwan's hugely successful science and industrial park in Hsinchu comes the Tainan Science-based Industrial Park (TSIP). Starting operations in 1997, the TSIP is designed to develop and upgrade high-tech industry in the south of the island.

It has a tough act to follow. With government funding for infrastructure and administration, and a combination of tax-breaks and subsidies for resident companies and plants, Hsinchu is now a massive 292-company park with an annual trade value of US\$21.76 billion.

By contrast, the TSIP's location is remarkably rural, with its shiny new buildings rising above a vista of rice and sugar fields. In fact, Tainan was chosen partly because it was close to various agricultural research institutes such as the Asian Vegetable Research and Development Center, Taiwan Livestock Research Institute and the Tung Kang Marine Laboratory. The park's planners originally hoped that agricultural biotechnology would be the main discipline in evidence at the TSIP.

### Sowing the seeds

But the reality is somewhat different. "We were trying to take advantage of the research institutes and agriculture-based industries that were already well-developed in the south," says Chein Tai, the TSIP's director general. "But of those agrobiotechnology companies that applied for park space, none had a high enough level of technology."

"We tried to support agrobiotechnology, but we can't do more than give infrastructure," explains Steve Hsieh, vice-chairman of the National Science Council, which administers the science parks. "The core products at Tainan are electronics and information technology, thin-film transistors and liquid crystal displays."

In fact, Tainan's industrial composition now looks

suspiciously similar to its northern counterpart in Hsinchu, with semiconductor foundry giants Taiwan Semiconductor Manufacturing Company and United Microelectronics Corporation among the first to set up new plants. Of the 40 companies currently moving to Tainan, only four are involved in biotechnology, the rest are split across integrated circuit design and manufacturing (16), computers and peripherals makers (2), wireless and telecommunications (5), optoelectronics (11) and precision instruments (2).

### Growth factor

The National Cheng Kung University (NCKU), one of Taiwan's top four universities, is close to Tainan. It hopes to play a similar role at the TSIP as Hsinchu's National Tsinghua and National Chiao-Tung universities do at Hsinchu, by fuelling the park's growth with well-trained workers, technology transfer opportunities, and an incubator programme.

Given that Tai was director of the NCKU's biomedical research centre, close collaboration can be expected. The NCKU is also relatively progressive in its attitude towards letting academics collaborate with industry. The university allows professors to work with start-up companies in one of two ways — they can work with the company for eight hours per week while carrying on university teaching and research responsibilities, or they can take a sabbatical of up to three years while the university holds their position open.

But as yet there are few tangible examples of interaction. Jyh-ming Ting, of the NCKU's Micro-Electro Mechanical Systems centre, hopes his technology will take root in a TSIP start-up. Among other things, Ting works on chips for high-throughput analysis of protein interactions. But he admits that he shares



Rural revolution: Tainan's science park is fuelling high-tech industry.

TSIP

some of the conservative attitude that has kept other NCKU academics from cashing in on the university's lenient industrial collaboration policy. "No one is willing to jump in the water first," he says.

The TSIP has other advantages as well as its location. For a start, it is spacious. Even at full capacity, the park has been designed to avoid the overcrowding seen at Hsinchu. Tainan also offers lower living costs and a cheaper, although still high quality, labour force compared with Hsinchu, says Hardy Chan, of ScinoPharm Taiwan, a company producing custom-made ingredients for pharmaceuticals. "There are many top quality technical schools in middle and southern Taiwan. In the past many graduates had to go north to find work, but they are happy to stay in the south," he says.

### Biotech success?

ScinoPharm took advantage of the government's increased interest in biotechnology to build expansive facilities at the park. Launched in 1994, ScinoPharm released its first product only this year, and some investors are getting anxious.

But Jo Shen, president of

ScinoPharm and a veteran of the US pharmaceutical industry, is not concerned. "Many Taiwanese investors try to think of biotech in terms of the quick return possible in semiconductor manufacturing, but we have to operate under a different model. You need facilities that will make the customer feel confident." Indeed, many researchers feel that investor demand for short-term return is a stumbling block for the development of biotech in Taiwan, and ScinoPharm (already with a backlog of orders) is one company to watch to see if the long-term vision can prove itself in Tainan.

The pace at Tainan seems set to pick up soon, with the Taiwan Semiconductor Manufacturing Company moving its corporate headquarters there and the Industrial Technology Research Institute also setting up shop.

All of Tainan's lots are accounted for, and Tai is already predicting a labour squeeze by 2004. But by then, he forecasts that the TSIP will have 100 companies and a production value of US\$10 billion — well on its way to being another Hsinchu.

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