

# Israeli industry asks for boost to R&D

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**High-technology industry makes up most of Israel's industrial exports. But leading companies, worried by the government's failure to invest in research and development, are threatening to take this work abroad.**

[JERUSALEM] The Israeli government is coming under increasing pressure from executives of high-technology companies to do more to promote the growth of their sector of industry, and to provide greater support for research.

Some of these companies, which play a key role in Israel's economy, are warning that they may be forced to transfer their research activities abroad unless they receive more government support. They say it will be cheaper to do the work in the United States.

The Knesset, Israel's parliament, is still considering budget legislation for 1999, but the outlines of the research and development budget are already fairly clear. Despite additional funding, at US\$407 million the budget falls nearly \$200 million short of what the Office of the Chief Scientist says is necessary to fund all worthy projects.

## Growth vital to the economy

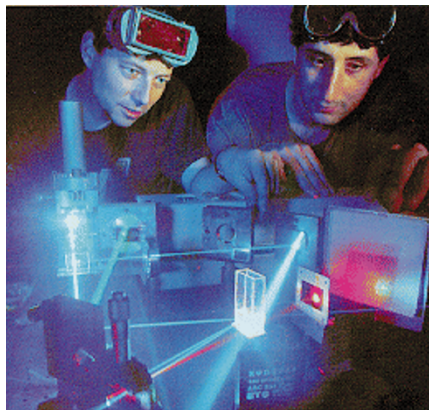
Large companies will be especially hard-hit, says Benny Sofer, deputy to the Chief Scientist. To channel more funds to smaller, newer firms, the finance ministry has set a cap on grants to large companies. Sofer fears that the larger firms will reduce their research and development (R&D) activities as a result.

High-technology products made up 62 per cent of Israel's industrial exports in 1997 — up from 51 per cent less than ten years previously — and were valued at \$9.2 billion. A recent, unpublished survey is said to have found that the software industry alone achieved exports worth \$1 billion in 1997.

Ephie Segal, chief economist in the Office of the Chief Scientist in the Ministry of Commerce and Industry, says that, given Israel's small size, the continued growth of high-technology industries — including electronics, software, pharmaceuticals, biotechnology and aerospace — is vital to the economy.

But he also points out that the future success of such industries depends on current investment in R&D. Israel's investment in R&D of 2.2 per cent of gross domestic product (in 1995) puts it comfortably among the leading industrialized nations. But the Chief Scientist's office and industry minister Natan Scharansky have been pushing for an increase in government R&D funds.

Shuky Abramovich, head of the economics division of the Electronics and Software



**In demand:** companies face a 'bottleneck' in the supply of trained electrical engineers.

Branch of the Manufacturers' Association, says industry needs another \$210 million to be invested in R&D. "At present, only 55 per cent of requests for grants are approved, and the demand is growing because industry — especially start-up companies — depends on these funds," says Abramovich. "But we don't see any long-term solution to this problem."

According to Abramovich, one temporary solution being considered by the industry ministry is for large companies to be offered the opportunity to pay off in advance — and at a discount — royalties owed to the R&D fund from profits earned from products made with the help of government grants. These funds would be funnelled back into R&D grants during the coming year.

## Marketing and staffing problems

The ministry has also asked for government funds to support the industry's marketing activities. Many companies with good ideas have failed to market their products abroad, eventually either failing or being bought by foreign companies which often transfer production and marketing overseas.

Scharansky has been lobbying Prime Minister Binyamin Netanyahu for greater assistance, pointing to the companies' threat to move research activities abroad. Although different high-tech companies have varying needs, most agree that the tax structure creates disincentives for the development and marketing of high-tech products.

There is also a broad consensus that the

country's technical infrastructure — such as telephone lines and charges — is not modernizing quickly enough. And industry says the government is not investing enough in technical and scientific education.

Other concerns are more sector-specific. The largest high-tech sector, electronics and software, suffers from a lack of skilled staff. According to the Manufacturers' Association, the industry is likely to face a shortage of 10,000 engineers over the next five years. Although this reflects a global shortage in these fields, it also threatens to eliminate one of Israel's competitive advantages.

"Until five years ago, manpower was relatively cheap here and Israeli entrepreneurs could take off," says Yoel Raban, an economist at Tel Aviv University who has worked as a consultant for the Industrialists' Association. "But high manpower costs are now a problem for start-up companies."

In response to such concerns, the higher-education system recently announced plans to double the number of Israelis holding degrees in electrical and computer engineering and computer science over the next five years. But industry says this is not enough.

"We're facing a bottleneck and I'm not sure that there is a lot we can do about it in the short run. We seem to have reached the limit," says Raban, adding that it may be necessary to import professionals from countries such as India.

Segal advocates bringing in engineers from the Far East, as is done in the United States. But that would require a major shift in Israeli culture. Until now, universities and industries searching for overseas talent have usually focused on Jewish candidates.

According to Abramovich, the authorities are likely to rectify some of the disincentives for high-tech companies in the tax structure. Changes could include making it easier to give employees stock options, and not requiring the immediate payment of tax when companies merge or split.

In contrast to electronics, biotechnology, the second most important high-technology sector, has a glut of trained professionals. But it lacks investment funds. This problem was highlighted by a survey prepared this year by the Interdisciplinary Center for Technological Analysis and Forecasting at Tel Aviv University (see *Nature* 392, 117; 1998).

Biotechnology had sales of \$336 million in 1997 and employed 1,259 scientists and engineers. But promised government money to encourage investment has not materialized, to the disappointment of industry.

Israel's high-tech leaders are also worried about the effect of the economic crisis in the Far East. According to the daily newspaper *Ha'aretz*, Israeli high-tech companies have raised nearly \$3 billion on Wall Street since the start of 1995, along with another \$1 billion in the past two years by venture-capital funds in New York. □