

# Recession forces R&D cuts in Japanese industry

**Tokyo.** The prolonged recession is biting hard into the research and development budgets of Japan's major electronics companies. As a result, many companies are changing the way they organize their research in order to make it more productive and cost-effective. If the recession continues, the future of the basic research they support may be threatened.

A survey of 10 leading electronics and telecommunications companies, which between them account for more than a quarter of Japan's industrial research and development, shows that ¥131 billion (\$1.24 billion) has been cut from the peak of ¥2,801 billion (\$26 billion) spent in 1991.

Hitachi, the biggest spender, has reduced its research spending by ¥40 billion and Fujitsu by ¥62 billion. Only the telecommunications company Nippon Telegraph and Telephone (NTT) predicts a significant increase in budget, after holding research and development spending flat in 1992.

Such companies had been hoping that Japan would be pulling out of recession by now. But an unusually cool summer resulted in reduced demand for products such as air conditioners, while the rising value of the yen has cut the value of overseas sales.

At present, there is no sign of an improvement in their fortunes, despite pump-priming measures by the government. As a result, forecasts for research and development spending in the current fiscal year, which runs to the end of next March, have been revised downwards.

The cutbacks in spending inevitably have caused difficulties. But they have also pro-

vided an opportunity for managers to introduce new methods of organization that have been planned for a long time.

Researchers at Sony, for example, are being asked to raise a significant portion of their research funds from the 24 business groups that make up the company, rather than from corporate headquarters. This is making their research more product- and goal-oriented (*Nature* 361, 193; 1993). And last month, NEC introduced a scheme — revolutionary by Japanese standards — that rewards the achievements of individual researchers.

Under NEC's "quality work" scheme, the most senior unionized researchers (*shunin*) in charge of small research groups are required to set their research goals. Their performance will be reviewed every six months, through both self-evaluation and an assessment by their colleagues and research managers. The output and quality of publications, as well as the number of patents filed, will also be taken into account.

The size of the researchers' six-monthly bonuses will be determined by their ranking on a scale of 1 to 10; the highest rank will get 30 per cent more than the lowest. The new salary package also includes a fixed payment for overtime regardless of hours spent, and more flexible working hours, including the right to work at home on research papers. Overall, the changes should save the company money, and if successful, they probably will be extended to other levels of researchers in the company.

Such practice runs counter to tradition in Japanese industry where everyone is treated equally and salary rises with seniority. But NEC research managers, who have been planning the introduction of this scheme for several years, are confident it will lead to better research performance, particularly in areas of more basic research.

Throughout the 1980s, spending on research and development by Japanese industry rose steadily, particularly during the economic boom at the end of the decade, when companies poured money into the basic research institutes and laboratories were set up to carry out blue sky research. The spending spree hit a peak in 1991 and for many companies investment in research has dropped sharply since then.

David Swinbanks

# Australian minister clashes with CSIRO on marine research

**Sydney.** Australia's Minister for Science and Small Business, Chris Schacht, seems set to clash with government scientists over his plans for the reorganization of public research. Last week Schacht revived a proposal, previously shelved, to shift two sections of the country's major research body, the Commonwealth Scientific and Industrial Research Organisation (CSIRO), into a



Schacht

separate marine research institute.

Schacht announced the move after he had received an independent report on the initial proposal. So far, CSIRO has not responded to the new announcement. But both its

officials and scientists are believed to be just as opposed to the idea as when it was first put forward in July.

Schacht originally proposed forming a giant National Institute of Marine Science by amalgamating the existing Australian Institute of Marine Science (AIMS) with the CSIRO divisions of fisheries, oceanography and atmospheric research.

But the outcry from both the CSIRO and sections of the scientific community was sufficient to make the government call for a report on the proposal from Ken McKinnon, vice-chancellor of the University of Wollongong, and the author of earlier studies of marine policy.

McKinnon's report, delivered last week, provides ammunition to both sides. On the one hand, it says that an oceans management policy is "essential to the national interest", and that "present organizational arrangements fall well short of what is required".

But McKinnon also comments that, while the amalgamation proposal had "attractive features", it is still flawed, as the proposed institute would not oversee all of the government's marine research effort.

One solution, says McKinnon, would be to include all other government bodies involved in marine research, for example the Great Barrier Reef Marine Park Authority. But before then, the government should first set up an Australian Marine Industries Sciences Council (AMISC), he says.

Both Schacht and CSIRO have welcomed McKinnon's proposal. But Schacht also issued a press release stating that the review had effectively endorsed his own proposals for the restructuring of science agencies in his portfolio, a move which has done little to improve his relations with CSIRO.

Mark Lawson

