

# SCIENCE BULLETIN

National Science Council  
106, Ho-Ping East Road, Sec. 2,  
Taipei, Taiwan, Republic of China



## NSC: 30th Anniversary

celebrate the 30th anniversary of the National Science Council, an exhibition was mounted on Monday 1, at the Science and Technology Building. Presented in the display were the numerous achievements in science & technology development supervised by the NSC. The exhibition included historical reviews, annual growth of budgets and research cultivation and recruitment of scientific and technological manpower, the status quo of sci-tech conferences on science and technology, large-scale research projects, five strategic areas of science and technology, historically valuable documents, NSC publica-

tions, and more. The major activities of the Science-Based Industrial Park, the Science and Technology Information Center, and the Precision Instrument Development Center were also presented in this display. A demonstration of the NSC microfiche system, the STIC information network, and the PIDC laser length-measuring system were also a part of the exhibition.

To synchronize with the exhibition, the Information Science & Technology Exhibition Center (ISTEC) was free and opened to the public on the same day. ISTEC aims to increase public awareness of new information and communication technology. It includes four areas:

- (1) Information Industry: introduces the recent progress in the information industry in Taiwan;
- (2) Special Exhibitions: demonstrate the products of the Industrial Technology Research Institute, the Directorate General of Telecommunications, and the Institute for Information Industry;
- (3) Computer Exhibition: introduces the historical development and the applications of computers;
- (4) Telecommunication Exhibition: introduces the development in telecommunication technology.

In addition, ISTEC has recently completed the first magic theater in Taiwan.



NSC Chairman Han M. Hsia delivering his opening remarks





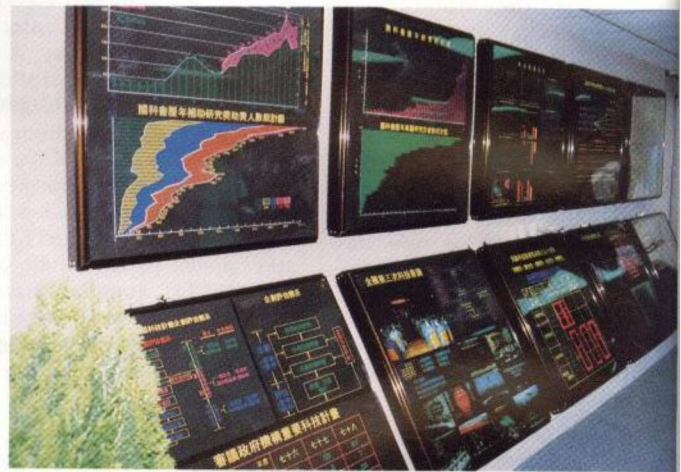
Dr. Hsia and senior staff members



Scenes of the exhibition



Participants crowded at the exhibition



Scenes of the exhibition

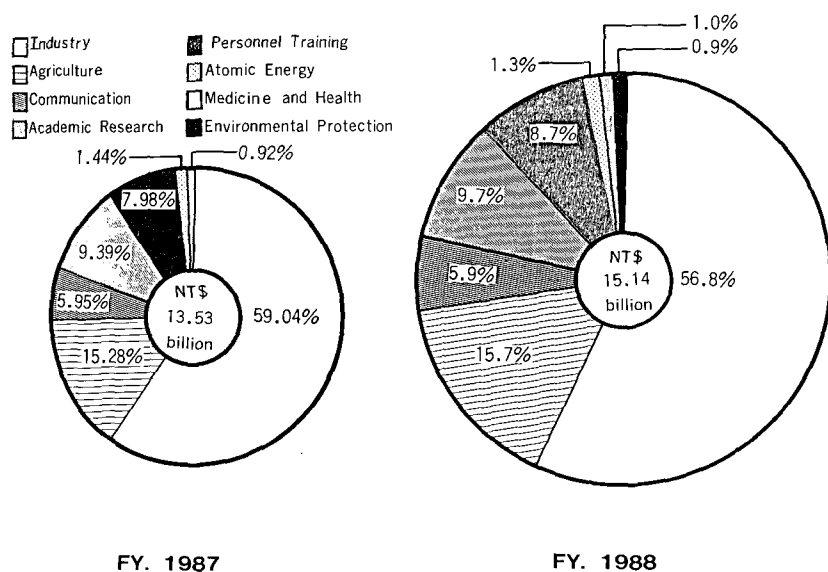


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Scenes of the exhibition

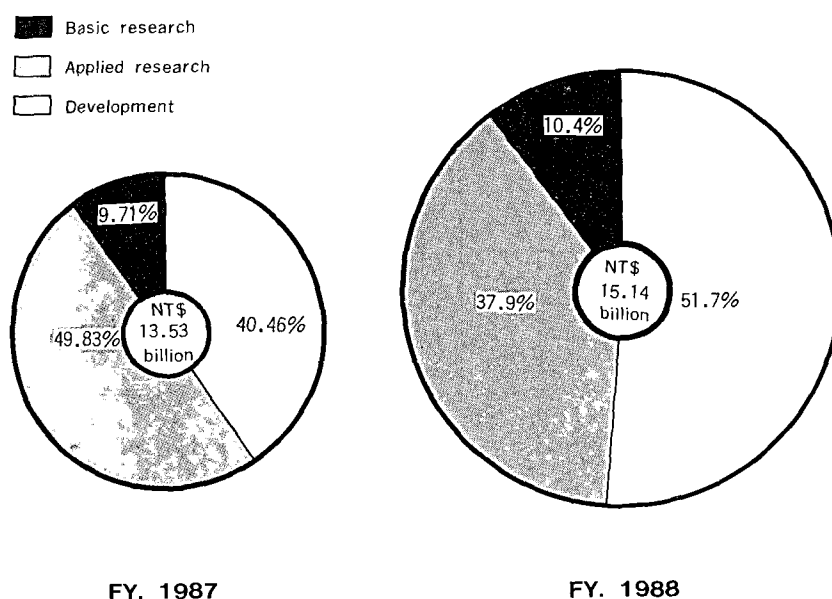
**Fig. 1. Government expenditures on S&T projects, fiscal year 1987, 1988**



## A Review of Government Investment in S&T Development Projects in 1988

During the fiscal year of 1988, the ROC Central Government budget totaled 4,821 billion NT dollars. About 131.7 billion NT dollars, or 2.7% of the budget, was designated for S & T. ROC Government investment in S & T had increased from 13.53 billion NT dollars in 1987 to 15.14 billion NT dollars in 1988, which is an annual growth rate of 11.9%. Ten billion NT dollars, or 76% of S & T expenditure, came from the Central Government budget with the remaining 5.14 billion NT dollars coming from government-owned enterprises. The research programs consisted of large-scale research projects and independent research projects, reaching a total of 6,448 projects in 1988. On the whole, academic research was the mainstay of all research programs, amounting to 3,022 of the total projects. However, industrial S & T was the largest spender, using 86 billion NT dollars. The distribution of S & T expenditures is shown in the following Table and Figures 1-3:

**Fig. 2. Government expenditures on S&T projects by project character fiscal year 1987, 1988**



**Table 1. S&T expenditure by field of research**

Research Program	Sponsoring Organization	Number of Projects	Expenditure (million NT dollars)	Distribution (%)		
				Basic Research	Applied Research	Development
(1) Atomic energy	Atomic Energy Council	44	200	2.0	68.2	29.8
(2) Industry	Ministry of Economic Affairs	535	8,605	1.4	28.3	70.3
(3) Agriculture	Council of Agriculture	2,368	2,367	11.2	67.3	21.5
(4) Communication	Ministry of Communication	68	895	3.4	44.9	51.7
(5) Medicine & health	Department of Health	242	149	3.2	74.1	22.7
(6) Academic research	National Science Council	3,022	1,467	67.9	30.5	1.6
(7) Personnel training	Ministry of Education	58	1,321			
(8) Environmental protection	Environmental Protection Administration	111	137	12.5	80.1	7.4
Total		6,448	15,141	10.4	37.9	51.7

# The Eleventh Board Meeting of the Advisers for Science and Technology

The Eleventh Board Meeting of the Advisers for Science and Technology was held the week of May 1-6, 1989, in Taipei. This year, in addition to nine returning advisors led by Dr. Frederick Seitz, there were two new foreign advisors from Japan, Dr. Toshio Sata and Dr. Toshihiko Teramoto, attending the meeting.

This year marked the beginning of the next decade and different approaches were tried to better arrange the meeting schedule and selection of topics for discussion. This resulted in the extension of interdisciplinary sessions and in the increased boundary of the Advisers' Group. Overall, this year's meeting turned out to be a successful and fruitful event.

On Monday morning, May 1, 1989, participants attended the opening session, which was co-chaired by Dr. Seitz & Dr. Han M. Hsia. The participants were briefed on the "Current Economic Situation" by Mr. K.C. Lee of CEPD and a "Status Report" was given by Mr. Patzen Wu of STAG. In addition, Dr. C.C. Chao and Dr. J.T. Hwang gave presentations on "Satellites" & "Ocean Science and Technology," respectively, to serve as introductions for the two interdisciplinary sessions held on May 4, 1989.

After the opening session, ten separate group discussions were held at various locations from Monday afternoon to Wednesday morning. They were:

Group 1 — "General Policy & Basic Science"

chaired by: Dr. Frederick Seitz & Dr. Pierre Aigrain

subject: Sub-micron Device Research/E-O

Group 2 — "Technical Manpower & Education"

chaired by: Dr. Robert L. Sproull

subject: Medical Education

Group 3 — "Health & Medicine"

chaired by: Dr. Ivan L. Bennett, Jr.

subject: Trauma Control/Pharmaceutical Technology

Group 4 — "Chemical Industry & Materials"

chaired by: Dr. Norman Hackerman

subject: Corrosion Protection/ New Medical Devices/ Super-conductors

Group 5 — "Energy"

chaired by: Dr. Umberto Colombo

subject: Energy Master Plan/ Power Shortage/ Overseas Exploration/ ALWR

Group 6 — "Agriculture"

chaired by: Dr. Gerhard Bunemann

subject: Agrobusiness/Horticulture/Natural Resources

Group 7 — "Telecommunications"

chaired by: Dr. Kenneth G. McKay

subject: Telecommunication Lab /Upgrading Service/ C&C

Group 8 — "Electronics & Information"

chaired by: Mr. Bob O. Evans

subject: HDTV/Workstation/ ICOM/Sub-micron Process/SEED/Network

Group 9 — "Environmental Protection"

subject: Waste Minimization

Group 10 — "Manufacturing Technology"

chaired by: Dr. Toshio Sata

subject: Manufacturing Technology Upgrade to Enhance Competitiveness

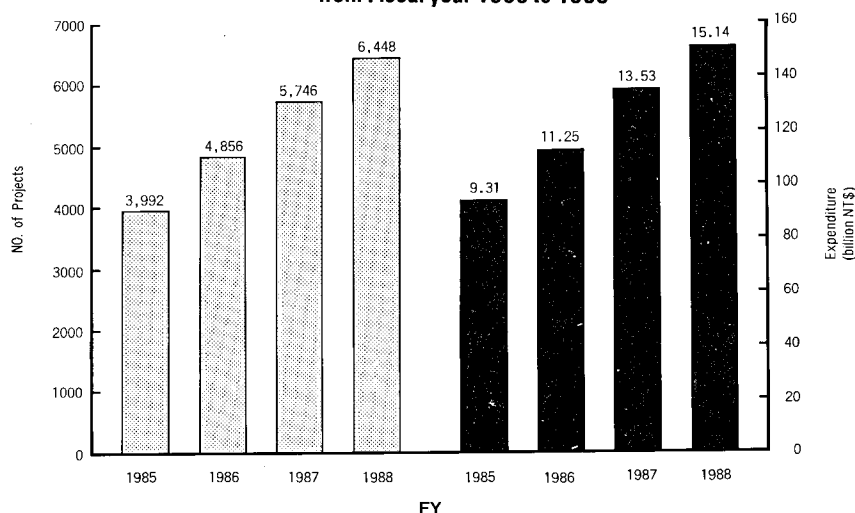
Following these group sessions were three interdisciplinary sessions covering areas of crucial importance to Taiwan. The "Water Resources" session on Wednesday afternoon featured "Groundwater Utilization and Conservation in Taiwan". The "Satellite" session on Thursday morning provided an opportunity to review "the Feasibility of the Satellite Program in the R.O.C." based on conclusions and recommendations submitted by the study committee. The "Ocean Science & Technology" interdisciplinary session on Thursday afternoon invited scientists and engineers to exchange knowledge and experience in surveying and developing ocean resources.

There were two informative and stimulating speeches open to the public on May 3rd. The first one was delivered by Dr. Robert L. Sproull on "Defense Research: How to Nurture It, How to Use It". The second one was given by Dr. Frederick Seitz on "Nuclear Science — Promises & Perceptions", complemented by Drs. Colombo and Aigrain's presentations on the subject of cold fusion. The advisors received a favorable response from the audience and numerous requests for papers.

On the evening of May 3rd, a special forum among advisors and selected groups of counterparts was held to discuss the overall operation of the meeting and perspectives for future meetings. Courtesy calls on H.E. President Lee and Premier Yu were arranged, as in years past, on the afternoon of May 5, 1989. Advisors were invited to give their observations before a banquet hosted by H.E. Premier Yu that night.

Finally, the Plenary Session was held on Saturday morning in the Main Hall of the Executive Yuan where each advisor gave his final report containing conclusions and recommendations.

Fig. 3. Government S&T: Number of projects and expenditure from Fiscal year 1985 to 1988



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