

Study on Regional Science and Technology Promotion (3rd Survey)

NISTEP Report No. 56

3rd Policy-Oriented Research Group

1. Study Objectives

1) This report covers the third and latest survey conducted under the "Study on Regional Science and Technology Promotion" targeting FY 1995. With little light so far shed on regional science and technology activities, the study stems from the realization that the most important and pressing issue regarding regional science and technology was to undertake comprehensive surveys on the regional framework of science and technology promotion, policy measures and expenditures, targeting prefectures and designated cities. The first survey covered FY 1990, and the second survey FY 1992.

2) The report has been prepared to provide basic reference material to be used by local governments when formulating S&T policy measures suitable for their regions and by the National Government when considering support measures for the promotion of regional S&T.

2. Study Method

1) The study uses the results of "S&T related expenditure questionnaire survey" undertaken targeting prefectures and designated cities as the basic data, complementing this with data and insight obtained from additional surveys to prefectures and designated cities, related statistics, interviews and a literature surveys.

2) Composition of questionnaire

- Question 1 Comprehensive implementation of S&T promotion policy
- Question 2 Local-government research institutes (expenditures by each institute etc.)
- Question 3 Local-government research institutes (restructuring and rationalization)
- Question 4 Local-government research institutes (strengthening of research capabilities)
- Question 5 Science-related higher education institutions
- Question 6 Medical institutions
- Question 7 Assistance of foundations and public corporations (R&D)
- Question 8 Assistance of foundations and public corporations (other)
- Question 9 Establishment of Funds (other than foundations)
- Question 10 Natural science museums and S&T education facilities
- Question 11 Promotion of research exchange (joint research projects)
- Question 12 Promotion of research exchange (other than joint research projects)
- Question 13 Assistance for research institutes and R&D-oriented companies
- Question 14 Invitation programs of research institutes and R&D-oriented companies
- Question 15 Technical advice and consultation
- Question 16 Grants in-aid R&D scheme
- Question 17 Development of S&T information system
- Question 18 Promotion of intellectual property rights
- Question 19 Encouragement of inventions
- Question 20 Human resources development (specialized technology areas)
- Question 21 Human resources development (improvement of research potential)
- Question 22 International exchange (development of centers)
- Question 23 International exchange (implementation of exchange programs)
- Question 24 S&T education
- Question 25 Public understanding
- Question 26 Priority research topics

3. Structure of Report

Synopsis [Summary of overall content of report]

Overview of regional S&T policies based on color graphs [color graphs used to explain main points]

Chapter 1 Background of Study and Objectives

Chapter 2 Study Method

Chapter 3 Implementation of Comprehensive Regional S&T Policy and Status of S&T Expenditures

[Described for each basic item based on questionnaire responses]

Chapter 4 Characteristics of Regional S&T Policy based on Results of Latest Survey

[Described on selected items taken from Chapter 3, along with views given in other studies and past surveys]

Chapter 5 Summing Up and Future Tasks

Supplementary Chapter 1 Examples of Implementation of Regional S&T Promotion Measures

[Case studies of progressive, creative and typical projects]

Supplementary Chapter 2 Status of S&T Local Government Expenditures

[Summarized for each local government based on data obtained from latest survey]

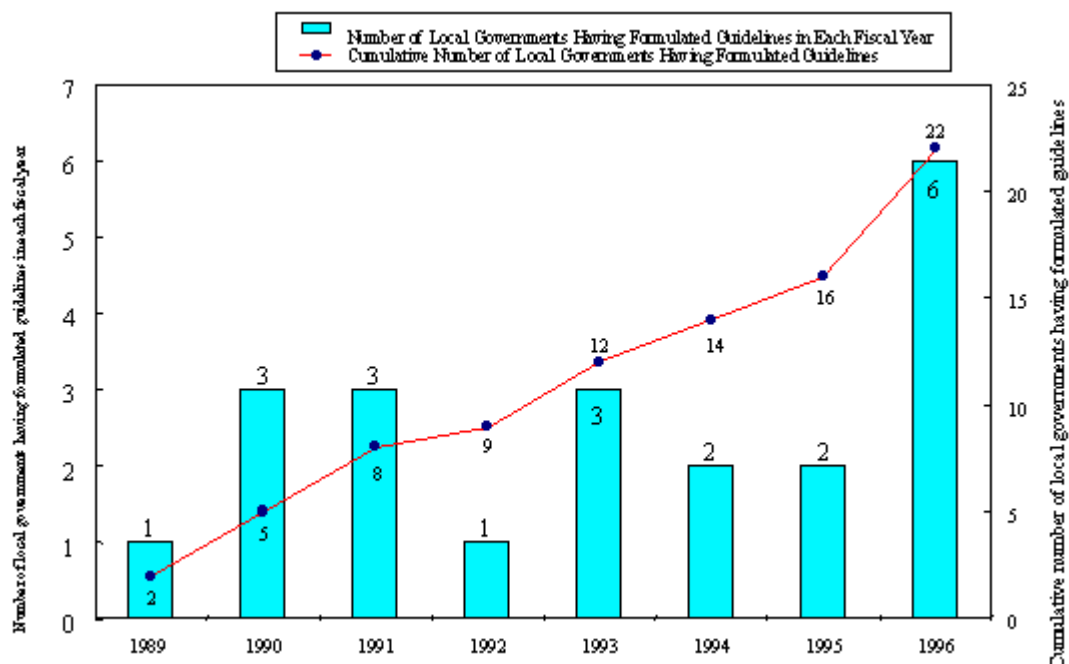
Appendix Questionnaire form and responses

4. Outline of Study Results

(1) Development of comprehensive S&T promotion policy implementation structure

1) The number of local governments that have set up an S&T council has increased from 10 in the previous survey to 18.

2) The number of local governments that have formulated basic guidelines on S&T policy has increased from 12 in the previous survey to 20. During the intervening period, Shiga and Kanagawa prefectures modified their respective guidelines. [See the accompanying graph.]

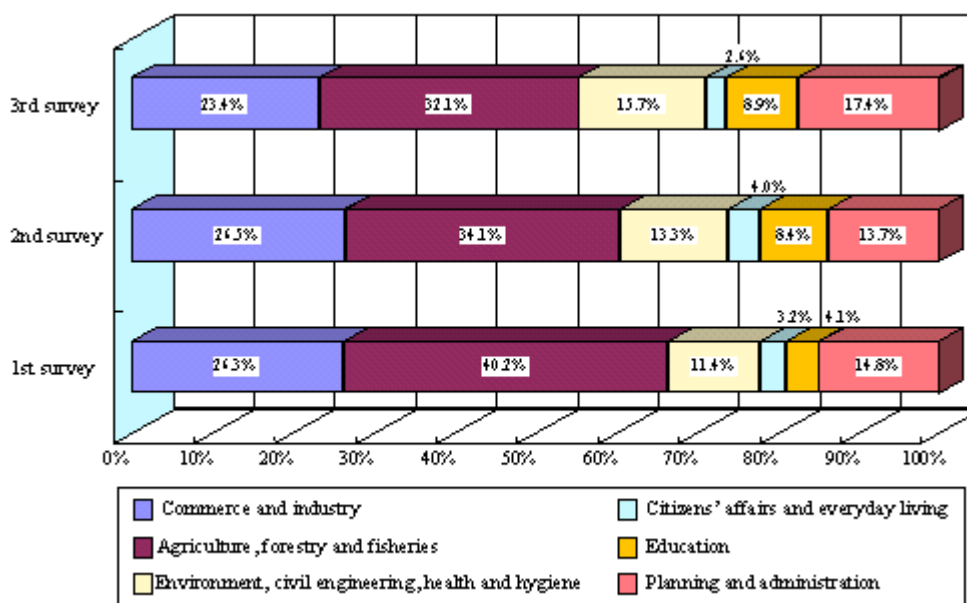


3) The number of local governments that have set up a dedicated S&T policy division has increased from nine in the previous survey to 12.

4) The number of local governments that have introduced at least one of the above three measures (S&T council, basic guidelines and dedicated S&T policy division) has increased from 15 in the previous survey to 24. This represents about half of all 47 prefectures. All in all, the development of a comprehensive S&T promotion framework has made steady progress.

(2) S&T expenditures (overall)

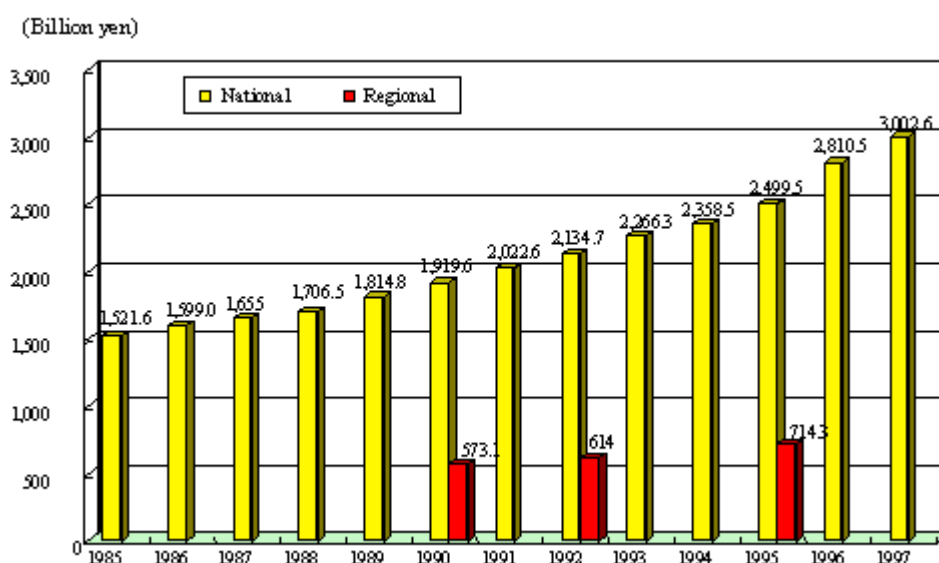
1) The combined S&T expenditures of prefectures and designated cities for FY 1995 stood at 714.3 billion yen. This is equivalent to 28.6% of the National Government's S&T related budget for the same fiscal year (2.4995 trillion yen). [See the accompanying graph.]



2) Regional S&T expenditures grew by 16.3% over the last three years, more or less equaling the growth rate of the national government S&T budget for the same period (17.1%).

3) A breakdown of regional S&T expenditures by government body shows that government bodies relating to agriculture, forestry and fisheries held the largest share, 32.1%, followed by those relating to commerce and industry (23.4%) and those relating to planning and administration (17.4%). One distinct feature of this government body mix compared to that of the National Government is the dominance of agriculture, forestry and fisheries.

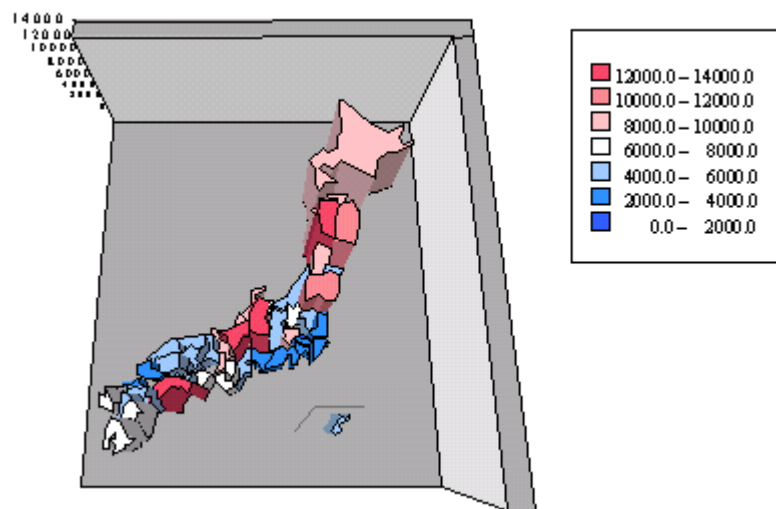
4) By destination of S&T funds, local-government research institutes account for the largest share, 51.6%, followed by higher education institutions (25.0%), foundations etc. (5.4%), and public education & information dissemination (5.2%). Over the three surveys, the share of local-government research institutes fell, while those of higher education institutions, public education & information dissemination, etc. rose, giving rise to a greater diversification in the purposes of S&T expenditures. [See the accompanying graph.]



(3) Inter-regional comparison of S&T expenditures

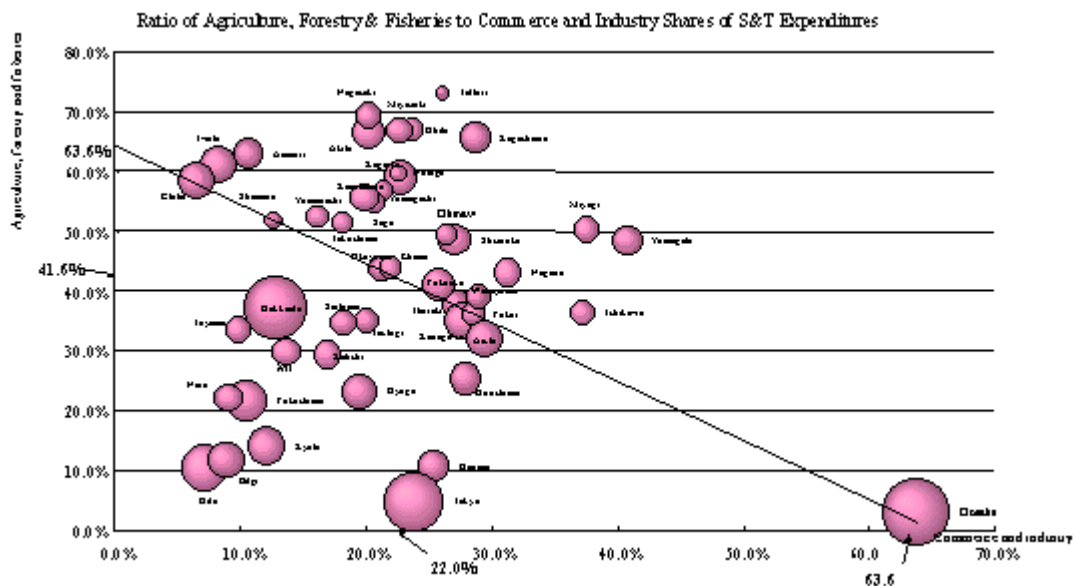
1) A prefecture-to-prefecture comparison of S&T expenditures (including designated cities) puts the following prefectures at the top of the list: Osaka (78.3 billion yen), Hokkaido (52.6 billion yen) and Tokyo (45.9 billion yen). At the bottom of the list are Tottori (3.1 billion) and Kagawa (3.8) billion. The maximum to minimum ratio stands at about 25.

2) By per capita prefectural S&T expenditures (including designated cities), the largest share went to Gifu Prefecture, 13,307 yen, followed by Shiga Prefecture (12,907 yen) and Kochi Prefecture (12,489 yen). Prefectures with small per capita S&T expenditures include Saitama (1,412 yen) and Aichi (2,806 yen). The maximum to minimum ratio stands at about 9. [See the accompanying graph.]



3) By S&T expenditure share of the overall prefectural expenditures, Gifu tops the list, with 3.35%, followed by Shiga (2.74%) and Fukushima (2.21%). At the bottom of list are Saitama (0.57%) and Tokyo (0.65%). The maximum to minimum ratio stands at about 6.

4) Where commerce & industry and agriculture, forestry & fisheries are combined and temporarily named "combined industry" to focus on the program nature aspect of regional S&T expenditures, the share of the combined industry is large in Tottori, Kagoshima and Oita, while the non-combined industry (other than combined industry) is large in Gifu, Shiga and Kyoto.



5) Observation of the ratio of agriculture, forestry & fisheries to commerce and industry shares of S&T expenditures in terms of the industrial structure for each prefecture shows that many local governments are nowhere near the national average for both primary industry (agriculture, forestry and fisheries) and secondary industry (commerce and industry).

(4) Local-government research institutes

1) In FY 1995, there were 572 local-government research institutes with 15,732

researchers between all prefectures and designated cities. In the same fiscal year, the number of national natural science research institutes (excluding university-related research institutes) totaled 73 with 9,157 researchers. Namely, researchers working at local-government research institutes outnumbered those working at national natural science research institutes by a ratio of 1.7 times.

2) Among local-government research institutes, those relating to agriculture, forestry and fisheries were dominant, with a share of more than 50% in terms of the number of institutes, number of researchers and operational expenditures, followed by commerce & industry, and environment, civil engineering, health & hygiene, each with a share about half that of agriculture, forestry and fisheries.

(5) Science-related higher education institutions

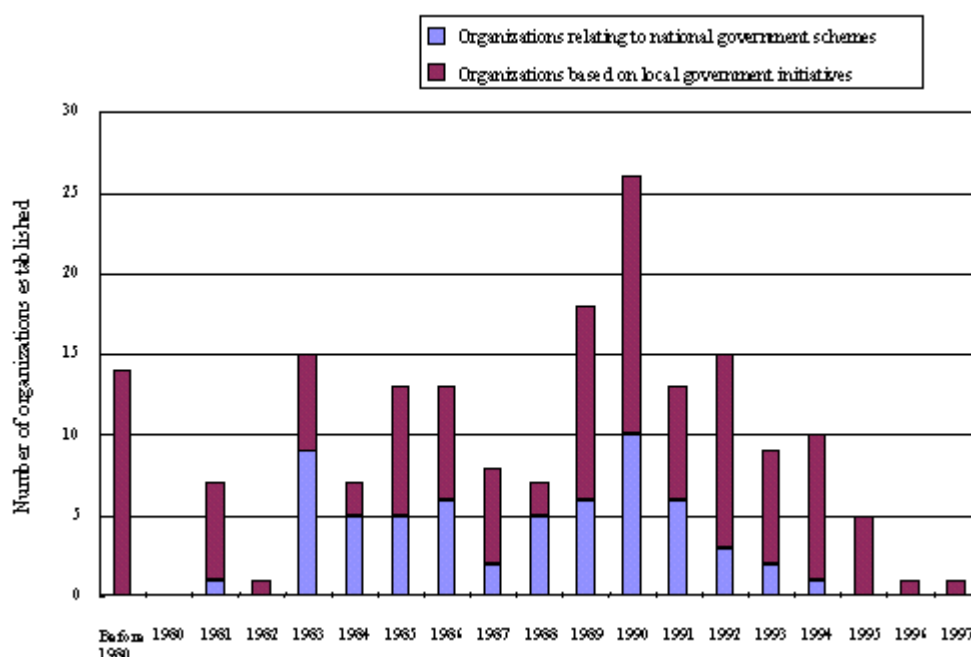
1) Questionnaire responses included 117 institutions. Of these, about half were agricultural colleges. There were also two publicly-established and privately-run science-related higher education institutions as follows: Tohoku University of Art & Design (Yamagata City) and Kochi University of Technology (Tosayamda Town).

2) Twenty-eight nursing institutions were established or planned after the previous survey (FY 1993), and of them 19 were nursing universities and junior colleges. With the introduction of yet more local-government nursing universities and junior colleges planned for FY 1998 or later, the role of local-government universities and junior colleges in higher education in nursing and public health is growing.

(6) Public corporations, foundations and other types of R&D (support) organizations

1) As of FY 1997, there are 183 public corporations, and foundations and other types of R&D (support) organizations in which prefectures or designated cities have invested throughout the country. Of these, 61 are related to national government schemes, with the rest (122) based on local government initiatives.

2) In trend terms, the number of organizations established in one year has been falling after peaking at 26 in 1990. [See the accompanying graph].



3) In FY 1995, prefectures or designated cities invested about 38.5 billion yen in public corporations, foundations and other types of R&D (support) organizations, up from 33.7

billion yen in the previous survey. By purpose, spending in the establishment of funds fell (from 11.8 billion yen to 7.8 billion yen) and that in commissioned projects etc. rose (21.9 billion yen to 30.7 billion yen).

(7) Promotion of intellectual property rights

1) Expenditures relating to promotion of intellectual property rights and encouragement of inventions has been included in this survey for the first time. Eighteen local governments said they had intellectual property rights promotion programs worth about 36.29 million yen. By purpose of spending, assistance for local branches of the Japan Institute of Invention and Innovation dominates.

(8) R&D human resources development

1) In the questionnaire, R&D human resources development programs are classified into "specialized technology areas" and "research ability improvement" according to the nature of the program and "private companies" and "prefectural government employees" according to the beneficiary of the program. According to questionnaire replies, a total of 20.5 billion yen was spent in human resources as a whole, with "specialized technology areas (private companies)", "specialized technology areas (prefectural government employees)", "research ability improvement (private companies)" and "research ability improvement (prefectural government employees)" accounting for 19.5 billion yen, 500 million yen, 200 million yen and 300 million yen, respectively. Namely, the overwhelming majority of human resources development expenditures occur in specialized technology areas, with only a fraction spent in research ability improvement.

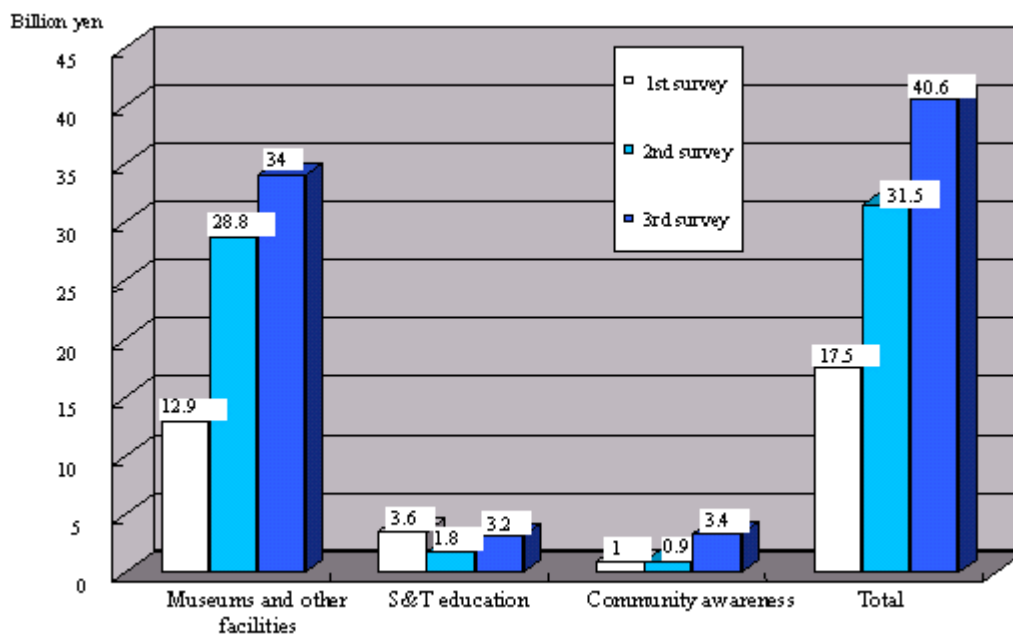
(9) International exchange

1) In FY 1995, international exchange expenditures rose in "both development of centers" and "implementation of exchange programs". (development of centers" from 400 million yen to 3.2 billion yen and "implementation of exchange programs" from 900 million yen to 1 billion yen.)

2) In the latest survey, the questionnaire covered sister city relationship status and international exchange activity records in recent years. Top international exchange partner countries in terms of the overall number of sister city agreements concluded are China (42), the U.S. (27), Australia, Brazil and France, while the country list for the number of actual international exchange activities undertaken is almost totally dominated by China (27), followed by the U.S. (5), with other countries taking up negligible shares.

(10) Public education & information dissemination (museum, S&T education and community awareness)

1) Public education and information dissemination expenditures consist of museum expenditures, S&T education expenditures and community awareness expenditures. The latest survey put public education and information dissemination expenditures at 40.6 billion yen, which represents a 29% rise from the previous survey. Growth occurred in all three components, particularly in community awareness. [See the accompanying graph.]



2) Questionnaire responses mentioned 85 natural science museums (including general museums with natural science coverage) and S&T education facilities, including 23 which are still in the planning stage. These facilities are classified into four categories in the questionnaire, and expenditures exhibit a clear upward trend in all four categories since 1989, particularly category B (natural science museums), which have experienced a recent rush in constructions (including those in the planning stage).

(11) Priority R&D topics

1) In the latest survey, a total of 177 topics were mentioned as "R&D or technological topics being pursued on a priority basis", involving 5.5 billion yen worth of expenditures.

2) By purpose, agriculture, forestry and fisheries stand out, picking up majority shares in terms of the number of topics and level of expenditures, followed by commercial and industry.