THE BRAZILIAN SYSTEM OF SCIENCE AND TECHNOLOGY

SECRETARIA ESPECIAL DA CIÊNCIA
E TECNOLOGIA DA PRESIDÊNCIA DA REPÚBLICA

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PRESENTATION

During the last 5 years, the Brazilian government has made a special effort towards a stronger scientific and technological development – without which there is no possible creative, participative and well-founded growth in the international competitive scene. The former Ministry for Science and Technology – now the Special Secretariat for Science and Technology of the Presidency of the Republic – is a good example of this effort.

We are aware that, if one compares Brazilian investments in Science and Technology to those of fully-developed countries, our investments are still very small. We are also aware, therefore, that, in addition to government efforts, a conscience must be developed – that of how important it is to build up an interaction between the government system and industry.

The effort of this Special Secretariat aims to improve existing operational efficiency. Preparing the public sphere to face the constant challenges now imposed on us, aiming at the future, will enable us to get the answers which only Science and Technology can provide.

We are, at the same time, making a contribution so that society gets to understand better the meaning and the strategic importante of Science and Technology for our autnomy, our well-being, and a better life-quality for the Brazilian people.

DÉCIO LEAL DE ZAGOTTIS
Special Secretary for Science and Technology

INTRODUCTION

In the 30's, the first efforts were made aimed at establishing agencies for the development of Science and Technology. Only in January, 1951, however, a National Research Council (CNPq) was established.

Afterwards, new agencies were created, several divisions of existing agencies came to be, the scientistas 'and researchers' community grew, and a new objective appeared: to have all federal agencies in the area coalesce around one central organ.

Today, the Special Secretariat for Science and Technology of the Presidency of the Republic, which enjoys the same status as a Ministry, and which answers directly to the Presidency of the Republic, plays this role, in addition to the former attributions of the Ministry of Science and Technology.

The competence of the Secretariat includes the administration and development of the scientific and technological patrimony, and establishing cooperation and exchange policies; coordinating national and sectional policies of Science and Technology (informatics, biotechnology, fine chemistry, new materials and precision mechanics). The Secretariat also supervises national policy on metereology, cartography, climatology and mineral technology.

For playing its oustanding role – which society already recognizes – in national development, through Science and Technology, the Secretariat has both its own administrative and technical structure and several joint agencies, some of them collegiate, some autonomous, some public, in addition to foundations.

Its structure also comprises especialized Secretariats: for Liaison with Industry, for Biotechnology, for Fine Chemistry, for New Materials, for Precision Mechanics, for International Affairs, and for Liaison with Public Agencies.

It also comprises the program for Preparing Human Resources in Strategic Areas (RHAE), which accompanies the specific policies of each Secretariat. RHAE's objective is to render investments more efficient, through common projects which involve both investments and human resources.

SECRETARIATS

The Secretariat for Liaison with Industry coordinates the relationship of Science and Technology groups with industry, regarding research, development and technology transfer. The Secretariat is responsible for making technologies already developed available to industry.

The Secretariat for Biotechnology coordinates actions aiming at developing the area. One of the coordinating organs is the Interministerial Commission on Biotechnology, composed by representatives of 7 Ministries. This Commission handles matters connected to intelectual and industrial property, biological safety and tax-reducing mechanisms. State-wide Programs on Biotechnology are also being created, to act as planners and coordinators of projects connected to each region's opportunities and needs. Hence the establishment of regional centers for industry and research groups interaction, to be funded and supported by both public and private means.

The Secretariat for Fine Chemistry, the most dynamic field in chemistry today, handles the wide field of research and development, whose applications to social and economical conditions are immediate. This Secretariat has been responsible for the estimulus and coordination o actions connected to the field development.

The Secretariat for New Materials was oriented to plan, to coordinate, to follow up on and to evaluate the national policy on new materials. Its mechanisms are such as strengthening human resources, strengthening the scientific and technological basis in universities, colleges, research institutes and industries, supporting national technical and scientific events in the field, and incentivating international cooperation.

The Secretariat for Precision Mechanics follows the two objectives ot the government's strategy in the field: on one hand, national capacity must be improved, so that Brazilian products become competitive; on the other, industry must be encouraged to apply and develop technologies in the field, for new products and new manufacturing processes.

The Secretariat for International Affairs handles relationships abroad and follows up on the international aspects of science and technology, aiming at identifying new possibilities of cooperation, at coordinating negotiations and at accompanying actions acruing from them.

The Secretariat for Liaison with Public Organs has the objective of keeping science and technology a part of actions of federal, state and municipal authorities. It is presently undertaking a Program for Support of Technological Parks. Another outstanding activity is the support to Science Centers, which divulge science for grade and high-school students, and which train science teachers.

COLLEGIATE AGENCIES

The Science and Technology Council (CCT)

The Council is the highest administrative and political organ which deliberates on government programs of science and technology. CCT is composed of 12 members, 7 of which represent Government, the other 5 representing society.

CCT deliberates on the Federal Government's Science and Technology plan, on the creation of science and technology instruments in the public sphere, and on importation and absorption of technology.

The Cartography Commission (COCAR)

It coordinates national policy on cartography. It was created in February, 1967, as a result of independent activities of the Ministries of Navy, Army and Aeronautics, The Brazilian Institute for Geography and Statistics, and other organs.

The National Commission of Meteorology (CONAME)

This Commission proposes the national policy on meteorology and climatology, and is composed by representatives of the Ministries of Aeronautics, Education, Internal Affairs, Navy, Mines and Energy, and External Affairs, among others.

AUTONOMOUS ORGANS

The Special Secretariat for Informatics (SEI) is the executive branch of the National Council on Informatics and Automation (Conin), created in October, 1979.

SEI gives support to Conin in enforcing the national policy on informatics, with both a normative and a controlling role. The Secretariat analyses requests for importation of hardware and software, supports national companies in the field, and examines projects of funding, research and development.

The Space Research Institute (INPE)'s activities aim at the peaceful usage of space, in three fields: space and atmospheric sciences, space applications, and space technology.

In the field of space and atmosphere, basic and applied research is carried out, aiming at obtaining further scientific knowledge of physical and chemical phenomena, resulting in this knowledge's usage and the accruing ecological, sociel and economic consequences. INPE's action in this field includes a center for launching stratospheric balloons, stations for sounding the ionosphere, obsevations of atmospheric luminescence, geomagnectic stations, a radio-obsevatory, laser-radar equipment, stations for satellite data receival, and computational systems for data treatment.

Activities in the field of space applications are connected to remote sensoring researchs, that is, the process for extracting information from images obtained by remote sensors, installed aboard planes or satellites.

The activities connected to space technologies are oriented by the systematic use of knowledge acquired through scientific research, directed to the production of useful materials, equipment and methods, including design and construction of prototypes and process demonstrations.

The National Institute of Technology (INT) aims at the production of new techniques, or at their adaption to industrial needs. It acts on the investigation of new knowledge and on technological assistance to national industries. The actions are related to materials technology, informatics applied to production, industrial design pollution and energy control, and industrial chemistry.

The National Institute for Amazonian Research (INPA) is responsible for acquiring much of what we know about the Amazon today. The Institute promotes studies, scientific research and technological development related to ecology and to the social, economical and cultural systems in the Amazon.

INPA today is a source of data for researches all over the world. Its library comprises 270,000 items (including a complete collection on the Amazon, with books dating from the XVI Century), 150,000 samples of plants, 200,000 fish, 250,000 insects, and almost 10,000 kinds of wood, all catalogued and all belonging to the Amazonian region.

INPA also contributes to train specialized human resources. It has a regular program of graduate studies on Fresh Water Biology and Fishing, Ecology, Botanics, Entomology, Forestry, Food Technology, Nutrition, and Chemistry of Natural Products.

Besides its installations in Manaus, INPA has three forest areas held as reservations, on experimental station, permanent groups of research, and lab-boats which collect data and material for research in the Amazon rivers.

PUBLIC COMPANIES

The Agency for Financing Studies and Projects (FINEP), gives long term funding for projects of scientific, technological, economical, and social development projects. It serves mainly universities, research centers, and Brazilian companies. It ranges from basic research to complementary studies to improve the efficiency of productive investments already installed, including applied research, experimental development and basic engineering studies of feasibility.

FINEP has four lins of funding:

- The National Fund for Scientific and Technological Development (FNDCT), the main federal fund for support of science and technology research in Brazil. FNDCT's resources are not returnable, and they serve the establishment, consolidation, expansion and modernization of the research infrastructure, as well as a support to graduate studies, mostly in universities and research institutes.
- Support for Users of Consulting Services (AUSC), which provides funds for Brazilian public and private companies in engaging consulting services for the undertaking of studies, projects and programs aiming at economic and social development.
- Support for Technological Development of National Companies (ADTEN), which supports Brazilian companies which want to devellop, to perfect, to absorb or to establish product, process, and service technologies.
- Support for Brazilian Consultants (ACN), which supports the capacitation and strenghthening of national consulting and engineering companies, specifically for internal upgrading (data and control systems), technological development (betterment of science and technology), exportation of services etc.

Brazilian Systems and Computers (COBRA)

The Company's objective is to generate Brazilian technology in the area of data processing, through the creation, manufacturing, and marketing of computers and systems. COBRA has been the pioneer in the national market since 1974.

COBRA designed, developed and industrialized the first completely Brazilian computer. Today it manufactures and markets computers and systems, including micros, supermicros, minis, superminis and terminals, besides data communication systems.

FOUNDATIONS

The National Council for Scientific and Technological Development (CNPq)

Foment of Science and Technology, researches, information and diffusion, are the basic areas in shich CNPq acts.

Foment is the most widely known activity. It is carried out through basic and special programs. The basic programs are permanent and aswer the demands of the scientific community, on a basis of merit and academic competence. The special programs correspond to strategic areas and multidisciplinary fields, in emerging science and technology subjects, such as the ones dealt with by the Secretariats.

Programs become operational through scholarships (for graduate studies in Brazil or abroad, e.g.); grants (for integrated research projects or for individual research); support of foreign researchers invited or hired by academic of research institutes in Brazil.

CNPq also has a series of institutes or units which carry out specific researches. They are: the National Obsevatory (ON), the Paraense Emflio Goeldi Museum (MPEG), the Brazilian Center for Physical Research (CBPF), the Institute of Pure and Applied Mathematics (IMPA), the Brazilian Institute of Information on Science and Technology (IBICT), the National Laboratory for Scientific Computing (LNCC), the National Astrophysical Laboratory (LNA), the Syncroton Light National Laboratory (LNLS), the Museum of Astronomy and Related Sciences (MAST), the Center of Scientific and Technological Policy (CPCT) and the Center of Mineral Technology (CETEM).

CNPq also supports production of scientific publications, by itself or in cooperation with several editors.

The Technological Center for Informatics (CTI), promotes research and development of technology, together with of supported by universities, research centers and private companies.

CTI is composed by four institutes (Automation, Computing, Instrumentation, and Eletronics), and its objectives are to support the inclusion of data processing in production, to foment and to coordinate scientific research in this field in universities, to promote technological development in universities, to promote technological development up to the generation of prototypes, and to accompany the programs of nationalization of products in the field.