

DOCUMENT OF THE INTER-AMERICAN DEVELOPMENT BANK

**BRAZIL**

**FEDERAL UNIVERSITIES DEVELOPMENT PROGRAM**

**(BR-0184)**

**PROJECT REPORT**

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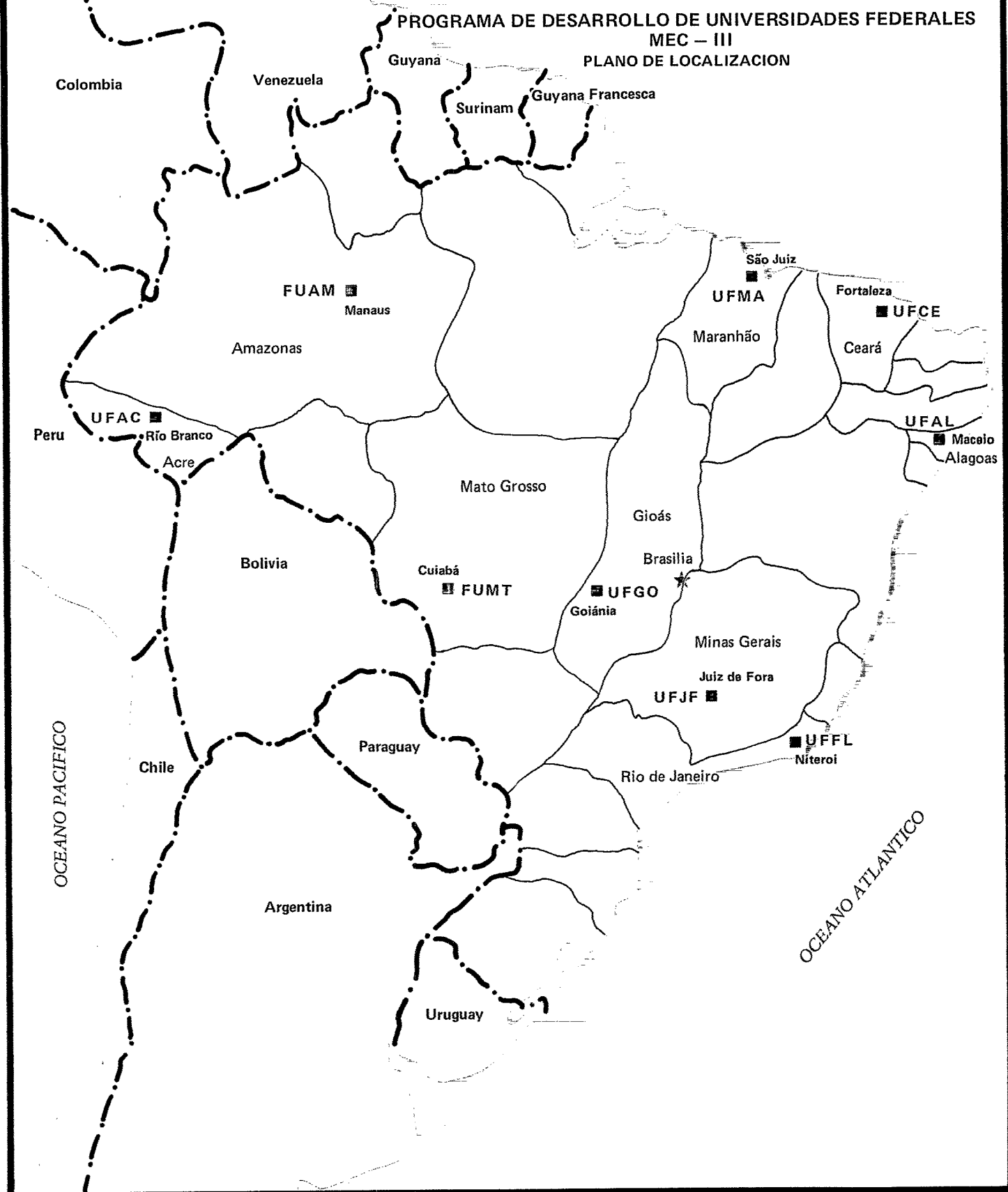
FEDERAL UNIVERSITIES DEVELOPMENT PROGRAM

MEC - III

This document was prepared by the Project Committee established on June 29, 1982, consisting of Messrs. R. Mayorga (PRA), E. Sánchez (PRA), M. Fierro (PRA), J. Casasco (Consultant PRA), V. Leister (LEG), and R. E. Segovia (OPS, Coordinator)

# BRASIL

PROGRAMA DE DESARROLLO DE UNIVERSIDADES FEDERALES  
MEC – III  
PLANO DE LOCALIZACION



BRAZIL  
FEDERATIVE REPUBLIC OF BRAZIL  
FEDERAL UNIVERSITIES DEVELOPMENT PROGRAM  
(BR-0184)

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LIST OF ACRONYMS

ABIMAQ	Asociación Brasileña de la Industria de Máquinas y Equipos
BID	Banco Interamericano de Desarrollo
CAPES	Coordenação de Perfeccionamiento de Personal de Educación Superior
CEDATE	Centro de Desenvolvimento e Apoio Técnico a Educação
CEPPCT	Comité de Avaliação de Préstamos, Proyectos y Cooperación Técnica
CEPES	Comissão Especial para Execução do Plano de Expansão e Melhoramento do Ensino Superior
CNPq	Centro Nacional de Pesquisas
CRUTAC	Centro Rural Universitario de Entrenamiento y Acción Comunitaria
DASP	Departamento de Administración y Servicio Público
FUAM	Fundação Universidade do Amazonas
FUMA	Fundação Universidade do Maranhão
FAST	Fondo de Apoyo al Desarrollo Social
FUMT	Fundação Universidade do Mato Grosso
INPA	Instituto Nacional de Pesquisas do Amazonas
MEC	Ministerio de Educación y Cultura
PREMEN	Programa de Expansión y Mejoramiento de la Enseñanza
PETI	Número equivalente de profesores a tiempo completo
SENAC	Servicio Nacional de Aprendizaje Comercial
SENAI	Servicio Nacional de Aprendizaje Industrial
UFAC	Universidad Federal de Acre
UFAL	Universidad Federal de Alagoas
UFCE	Universidad Federal de Ceará
UFFL	Universidad Federal Fluminense
UFGO	Universidad Federal de Goiás
UFJF	Universidad Federal de Juiz de Fora
UTA	Unidad Técnica-Administrativa

## I. INTRODUCTION

This chapter contains the basic information on the Program, which includes the background, the purpose of the financing, the loan request, the Bank missions, its total cost and financing, and its priority.

### A. Background

- 1.01 The "University Reform" is understood to be a set of changes made since 1966, that completely transformed the Brazilian university system, particularly its major component, the government universities. The purpose of the reform was for the universities to operate in an integrated manner and in a fashion in keeping with their basic objectives.
- 1.02 There were institutions within the Federal System of Higher Education that fell far short of the requirements under the reform. Identified in 1975, there were approximately 20 to 25 of these: for the most part, these institutions are located in the relatively less developed regions of Brazil, i.e., the North, the Northeast, and the Central West. The Ministry of Education and Culture (MEC) used its own resources to finance the development of 6 of these institutions. With the Bank's participation, through Loans 305/OC-BR and 459/SF-BR, it financed the development of another 7. During the period of execution of these two investment programs, yet another federal university had to be attended to. In the end, the number of universities that required major investments during the period 1976-1986 climbed to 22.

### B. Purpose of the Financing

- 1.03 The purpose of the global program under consideration in this Project Report, for a total estimated cost of the equivalent of US\$200 million, is to develop the federal universities that still have major deficiencies. Through the program, efforts will be made to bring them more in line with the requirements of the University Reform so that they may make a more effective contribution to Brazilian development, with particular attention to the needs of the local and regional milieu in which they are located.
- 1.04 These universities are situated in zones or regions that have some special economic potential, either because they are on the country's agricultural frontier, or because they are a center of industrial or mining development, because they have geological-mineral deposits that are known but are underexploited, because they are rich in forests, water resources and land reserves suitable for agricultural and livestock production, or because they are well situated to provide services and products to major market centers.

- 1.05 The program emphasizes the qualitative aspects of university development, an adequate relationship between the universities and the milieu in which they are located, and a reduction in the regional differences within the Federal System of Higher Education.

C. Loan Request

- 1.06 Through a letter dated December 28, 1981, the Minister of Education and Culture (MEC) of Brazil presented a loan request to the Bank, for financing for the Federal University Development Program, in an amount of US\$95 million.

D. Bank Missions

1. Orientation missions

- 1.07 To draw up the program, the Bank did not send orientation missions. Rather, the Office in Brasil provided steady assistance to the MEC during preparation of the program, which covered a period from July 1980 to the presentation of the loan request in December 1981. In addition to the foregoing, in February 1981 an economist from the Project Analysis Department guided the CEDATE authorities in preparing the socioeconomic data required for evaluating and analyzing the operation.

2. Special mission

- 1.08 Between June 8 and 18, 1982, the Bank sent a special mission to determine, in collaboration with authorities from CEDATE, just how much of the information that was missing for the analysis of the program was in fact available and how to get it, and to compile, study and organize the available information so as to have it ready for the Analysis Mission.

3. Analysis Mission

- 1.09 From August 9 through 27, 1982, the Bank sent an Analysis Mission to Brazil to analyze the program from the institutional, technical, legal and socioeconomic standpoints.

E. Total Cost and Financing

- 1.10 The total cost of the program is estimated to be the equivalent of US\$200 million, of which the Bank would finance US\$95 million, in other words 47.5%, (US\$75 million from the ordinary capital and US\$20 million from the Fund for Special Operations); and the local counterpart of US\$105 million, in other words 52.5%, by the Federal Government.

F. Priority

- 1.11 The Federal Government gives this program high priority inasmuch as it is the final stage necessary for the consolidation of the federal universities and so as to be able to ensure, as a minimum, that each state of the union will have a high quality federal university with an integrated campus. That priority was stated on the occasion of the presentation of the loan request and was confirmed for the Special Preprogramming Mission of August 1982, by authorities from the Ministry of Planning of Brazil, through SUBIN, as a priority project for 1982.

G. Conclusions and Recommendations

- 1.12 The proposed program falls within the Bank's policy guidelines, and is the final stage of the consolidation of the Brazilian federal universities. It also adequately addresses the academic aspects of university development.
- 1.13 In the detailed analysis of the program, which appears in the chapters that follow, one sees that the program is fully justified from the institutional, financial, technical, legal and socioeconomic standpoints.
- 1.14 In view of the foregoing, the Project Committee is recommending approval of this operation, in accordance with the terms and conditions given in this report.

## II. FRAME OF REFERENCE

This chapter contains a detailed analysis of the System of Higher Education in Brazil. It begins with the type of institutions that make up the system, the activities they perform, the students and professors, the academic structure, financing and material resources. It then goes on to discuss the problems and needs that the sector encounters and the policies and programs of the MEC. Finally, it presents a summary of the other educational sectors and discusses the relationship these have with the system of higher education.

### A. Basic Data 1/

#### 1. Functions

2.01 In accordance with the pertinent laws of Brazil, the basic functions or target activities of the institutions of higher learning are as follows:

- a) teaching (an activity whereby the high-caliber professionals that the country needs receive general and specialized training);
- b) research (an activity that generates knowledge, both basic and applied, in all the disciplines and their respective combinations and related fields); and
- c) extension (an activity to spread culture and learning, through which the resources, skills and knowledge of the university are used to directly service social needs).

Those activities must be carried out in such a way that they are mutually complementary and mutually supportive.

#### 2. Types of institutions

2.02 The system of higher education in Brazil is composed of 875 institutions, 65 of which are universities and 810 of which are separate schools or colleges (see Annex 1 - page 1). While both must conform to the general legislation in force with respect to higher education, there are a number of features that distinguish universities from schools and colleges.

- a) A difference in the emphasis in the target activities. While the schools devote most of their resources to teaching, universities use a considerably greater portion for research and extension.
- b) Differences in the diversity of fields of learning that they cultivate. Around half of the separate schools or colleges offer only

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1/ Annex 1 contains detailed statistical data on the Brazilian system of higher education.



one course or program of studies and the vast majority offer less than 5. Generally speaking, universities offer more than 20 and some offer as many as 60 different programs of study.

- c) Differences in size. The average number of students in the universities (approximately 10,000) is 11 times greater than the average number of students in schools (less than 900).
- d) Structural differences. All the Brazilian universities are organized into departments. In most of the schools, the departmental system is used only in part or not at all.
- e) Curricular differences. While the study programs in the universities include compulsory general courses, which are common to a wide variety of related fields, the schools generally offer much less in the way of basic disciplines.
- f) Differences in academic rigor. The academic levels required to enter and remain in the universities are considerably higher than those required in the schools. The teaching staff in the universities has a higher degree of specialization and devotes a greater portion of its time to the activities proper to institutions of higher learning.

- 2.03 In accordance with the pertinent laws, the Federal Board of Education of Brazil regulates the requirements that must be met to establish universities and schools; in each case, it determines whether those requirements are being met and grants official recognition to some institutions.
- 2.04 Of the 65 Brazilian universities, 45 are government institutions and 20 are private. The government universities are federal (34), state (9) and municipal (2).
- 2.05 The separate schools or colleges are predominantly private. Of the 810 in existence, 627 are private, 120 municipal, 47 state and 16 federal.

### 3. Activities

- 2.06 As indicated earlier, the bulk of the research and extension activities of the higher education system are conducted in the 65 universities of the country. In all, those activities cover a wide variety of fields of learning and are related to numerous sectors of socioeconomic and cultural activities in Brazil. This is explained in Chapter IV in greater detail.
- 2.07 As for the education, there are 4,079 graduate programs in the country, leading to a number of academic degrees (technologist, "licenciado," "Bacharel") and 903 graduate programs (masters degree and PhD). While the schools are more numerous, as a whole the universities offer more

programs of study than the schools. This difference is particularly notable in the programs at the masters degree and PhD levels, where the vast majority are offered by the universities.

- 2.08 To accomplish the basic functions of the institutions in the system there must be another group of activities to make possible, support, manage and coordinate the activities involved with the basic functions. Those activities are subordinate to the "target activities" mentioned earlier and in Brazil are called "means activities" of the universities and schools.
- 2.09 According to a study conducted in 1980, only in the federal institutions of higher learning does the teaching staff use its work time as follows: for undergraduate teaching, 49.1%; research, 19.3%; extension, 8.9%; teaching and research with postgraduate students, 6.7%, and means activities, 16.0%.

#### 4. Students and professors

- 2.10 The enrollment in higher education in Brazil was approximately 1,345,000 regular students in 1980, around 45% of whom were women.
- 2.11 By type of institution, enrollment broke down as follows: 392,000 students in government universities (29.1%); 250,000 students in private universities (18.6%); 101,000 students in public schools and colleges (7.5%), and 602,000 students in private schools and colleges (44.8%). (See Annex 1, page 2)
- 2.12 The distribution of enrollment by course area or program of study was as follows: 322,000 students (23.9%) were enrolled in programs in exact sciences, natural sciences and technology; 165,000 students (12.3%) in biological sciences and health professions; 41,000 students (3.0%) in agrarian sciences; 711,000 (52.9%) in human, economic and social sciences; 106,000 (7.9%) in arts and letters. (See Annex 1 - Page 5). This breakdown was, however, very different between schools and universities. In schools, enrollment was highest in the human, economic and social sciences and arts and letters, while in universities between 60% and 76% of the students enrolled were in exact sciences, natural sciences, technology, biological sciences, health sciences and agrarian sciences.
- 2.13 The geographic distribution of the enrollment was as follows: 60.9% of the students were in the southeast of the country (819,000 students); 16.4% in the northeast (221,000); 15.6% in the south (210,000); 4.8% in the central-west (64,000), and 2.3% in the north (31,000 students) (see Annex 1 - page 4).
- 2.14 All of the figures cited above vary from year to year. The trends that are most clear are as follows: enrollment increased at extraordinarily high rates (21.5% per annum) between 1970 and 1975, particularly in the private schools and colleges. But the rate of growth has slowed down

since that time (up to 4.4% in 1980), due to more rigorous government controls. The regional distribution of enrollment improved somewhat, but it is still very much concentrated in the south and southeast (see Annex 1 - page 6).

- 2.15 As for professors, in 1980 there were approximately 116,000 teachers within the higher education system. Of these, over 43,000 were associated with the federal institutions (with 22.5% of the students).
- 2.16 Some 47% of the professors throughout the entire system work full-time for educational institutions; but this percentage increased to over 65% in the federal institutions. Something similar happened with the degree of specialization within the teaching staff: the percentage of professors with masters degrees and/or doctorates in the federal institutions plus the percentage of professors with other postgraduate (skills improvement and specialization) studies in the broad sense, was far greater than the percentage for the system as a whole.

#### 5. Academic organization of the institutions

- 2.17 The Brazilian University Reform of 1966/1968 (See Chapter IV) established that all universities in Brazil must be organized into departments. According to that system, the department is the basic unit in the university's structure and brings together all those scholars in the same discipline, and their respective material resources. This structure is very different from the traditional university structure, where the school or college is the basic unit, with its own professors, students, classrooms, libraries, laboratories, officials, standards, and even sources of financing.
- 2.18 Under the traditional structure, professors of mathematics, for example, were scattered among numerous schools or colleges, i.e., all those that were in need of that discipline. Under the departmental system, on the other hand, all mathematics professors within a university are located within the same unit and coordination mechanisms are established to incorporate the various interdepartmental inputs into any course of studies. In one case, the principal is to group them according to the field the student is studying; in the other it is the discipline that the professor knows. The essential requirement of the schools is to teach, that of the department to know, which should be reflected in complementary and mutually enriching activities in education, research and extension.
- 2.19 The most widespread opinion in university circles in Latin America is that the departmental system has great advantages in terms of efficiency in the use of resources, intra-university communication and the critical mass required for research and extension functions.

- 2.20 As indicated earlier, all universities in Brazil are organized by academic department, although these departments can be grouped into broader units, under various names. Where separate schools or colleges are concerned, the question is not very relevant, since most offer only one or two programs of study and perform virtually no research and extension activities. The larger and more complex schools are at times organized on a departmental basis, while others continue to function as they did before the reform.

#### 6. Financing and material resources

- 2.21 The private institutions of higher learning basically cover their costs by charging for the services they provide, especially with student fees. Although to a lesser extent, they also receive revenues through private international donations and government subsidies.
- 2.22 The current expenditures of the public institutions of higher learning are basically carried by the public treasury, be it under the budget of the federal union, the budget of the states or the budget of the municipalities, depending upon the nature of each institution. Although in lesser amounts, the public institutions also obtain revenues for certain services, particularly research. Studies in government universities are gratis, save for some small, token fees.
- 2.23 To finance investment expenditures of government institutions, and in addition to the budgetary allocations mentioned above, international loans are used such as the one being considered here and loans from the "Social Development Assistance Fund" (FAS). Service on such loans is assumed by the Federal Union.
- 2.24 The material resources that the institutions of the system have vary greatly, depending of course upon the nature and wealth of their respective sources of financing. Generally speaking, universities are better endowed than the schools, and the public institutions have greater resources than private institutions. However, this is not always true and there are a number of government universities that operate under very precarious and unsatisfactory conditions. All of this creates a very complex problem in terms of establishing priorities and assigning resources. To attend to these matters in rational fashion, specialized organs have been created within the Ministry of Education and Culture (MEC).

#### B. Major Problems and Needs

##### 1. High demand for higher studies

- 2.25 The demand for higher studies has been great in the last decade and continues to be very high throughout all the regions of Brazil. With some regional variations, for every slot available in the first year of studies within the institutions of the system, there are more than 4

applicants. That figure is an exaggeration of the real demand, because frequently the same individual applies to two or more institutions. But all evidence available indicates that even discounting that factor, the pressure would continue to be high.

- 2.26 The demand is greater in government institutions than in private institutions, because the studies are gratis and because the most widespread opinion in Brazil is that the government institutions are on the whole, better (see Annex 1 - pages 7 to 9).
- 2.27 One point related to the problem of social pressure in whether the studies should or should not be paid in government institutions. Because of the rigorous academic entry requirement, those who had the best educational opportunities early on, have the advantage in terms of being admitted to such programs. Generally this parallels other variables of socioeconomic wellbeing and availability of funds. There is a heated polemic in Brazil at this time with regard to this matter. There are those who think, based on the regressive effects that free tuition has on income distribution, that the cost of the education ought to be charged (through various mechanisms) to its direct beneficiaries. There are also those who think that the problems with distribution in Brazil come from other causes and other sectors, and that it is there that solutions must be sought, rather than backing down on what they consider to be an important social achievement in the long run. The debate continues; for the moment, no definitive conclusions have been reached.

## 2. The problems of quality in higher education

- 2.28 Along with the quantitative demand, there is an ever greater need to improve the quality of the program of studies. This is obviously related to income expectations and the status of individuals and families who have access to higher education and who come mainly from the middle class. It is also related to the fact that despite the rapid increase in enrollment in the public and private universities, there are not enough public universities to accept all applicants and this has spawned numerous weak schools that are not well equipped to provide a higher education that is really useful for professional work.
- 2.29 Apart from the expectations of individuals and families that pressure for expansion and improvement in higher education, there is evidence that, given the natural resources and potential of Brazil, the lack of adequately trained human resources may become an important obstacle to the economy's rapid development. For education, the ratio of benefits to social cost tends to be higher when the quality is higher. Considerations of this type are part of the economic evaluation of this program (see Chapter VIII), and are discussed there in organized fashion.
- 2.30 The problems with the quality of higher education are not confined to its relevance to professional work after graduation. They also include such aspects as stimulating intellectual creativity; strengthening general aptitudes such as the ability for abstraction, analysis and synthesis; the use of the scientific method; creation and reinforcement of values, etc. They also involve factors used in the learning process such as tools and support personnel, physical space, teaching materials, bibliographical materials, equipment and tools of various types.

3. The need for regional relevance <sup>1/</sup>

- 2.31 The idea that the institutions of higher learning must relate to the milieu in which they function and respond to its specific needs is well entrenched in Brazil. That view is part of general university thinking in Latin America, which considers it unacceptable for the various universities to teach and research matters that have little relevance to the needs of the respective country and that do little to contribute to correcting concrete social problems. In Brazil, this idea takes on a very special regional aspect, due to the size of the country, the differences among its regions and the volume of natural resources being underutilized in various zones or geographic regions.
- 2.32 Perhaps some examples will suffice to illustrate the overall need. The "Carajas" project (extraction and processing of minerals in the northern region of the country) alone would require a quantity of professionals in technological disciplines that the universities nearby could not train at their current capacity. The difficulties in employing the qualified manpower that the project requires limit the chances of speedy execution.
- 2.33 Scientific research in universities and centers in Brazil has demonstrated the great energy, medicinal and food potential (among others) of numerous plants and trees in the Amazon jungles; in some cases, technologies suitable for their exploitation have already been successfully developed. However, over 90% of the Amazon's plant life has not been researched at all, so that botany knows nothing whatever of its potential, except that it must be very great when it has 3 million square kilometers of forest.
- 2.34 In the north and central-west of Brazil, Chagas disease is rampant. This is a tropical disease that produces extreme weakness and is endemic in the individuals affected. In some cases it is lethal. The tropical pathology institute of one university in the central western region has discovered ways to prevent the disease and will soon use its health extension services to reduce the number of cases of this and other serious tropical diseases. That activity may have a highly beneficial effect upon hundreds of thousands of individuals.
- 2.35 Brazil produces most of the world's supply of quartz. However, the country is not among the six countries that use it on a large scale for the production of watches and in the optical industry. This is due in large part to technological deficiencies that the universities could help to correct if they could devote sufficient resources to this. The same is true in other technological fields.

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<sup>1/</sup> Annex 2 contains a graphic study of the programs of study offered in the various regions of Brazil.

- 2.36 Brazil's water potential - abundant rivers and lakes and long coastlines - is undertapped. The universities as a whole do not produce sufficient professionals in fishery engineering or sufficient studies on the biology of fish and marine life. Water pollution in certain industrial zones constitutes a serious ecological danger and numerous biochemical studies are required to eradicate it. Some universities in Brazil are focusing more attention on these matters.
- 2.37 Recently, modern economic activity has expanded to extensive areas of the central-west and north of Brazil and this has brought important conflicts having to do with the cultural effects on the indigenous groups in those zones. One university in Mato Grosso, arguing that there is a need to gain a better understanding of the values and expressions of these cultural groups, is conducting anthropological studies to avert cultural upheavals, without harming economic development.

#### 4. Institutional heterogeneity

- 2.38 The basic information on the higher education system does not leave any room for doubt as to the major differences that exist between the institutions in the system. The problem is not the diversity, but rather that many institutions are unable to adequately perform the basic functions for which they were created or to carry out the activities that constitute their very purpose under reasonable conditions.
- 2.39 The drive to cut down on the existing disparities is not prompted by the desire to pattern some institutions after others; rather, it is the product of an awareness that those basic functions are in fact important to Brazil's future and that more institutions must be equipped to perform them satisfactorily. For the Federal Government, the task is more pressing among the universities that are directly and immediately under its responsibility; in other words, the federal universities.

#### C. Policies and Programs

- 2.40 In order to adequately attend to the needs of the higher education system, the Ministry of Education and Culture of Brazil (MEC) has adopted the following major policies:

##### 1. Priority to qualitative development

- 2.41 MEC is of the view that at its present stage of development, the system of higher education is mainly in need of qualitative improvements. In the decade of the 70's it underwent great expansion; in this decade, more attention must be given to the task of consolidation. In other words, the quality of the education offered within the system must be raised, research and extension must be encouraged, gaps left by rapid growth must be filled and the weak elements in the system must be strengthened.

- 2.42 The principal elements required for qualitative development are as follows: a) a stable, competent academic corps dedicated to university activities; b) adequate physical facilities on a reasonably well-integrated campus, and c) an efficient organization that brings into balance functions, disciplines and resources.

2. A reduction in regional disparities

- 2.43 The well-known general differences that exist among the regions of Brazil are also reflected within the system of higher education.
- 2.44 Since 1975 it has been a stated policy of the MEC to reduce those disparities among the educational institutions. That year, a plan was designed for development of 21 federal universities, which were regarded as strategic within the system. That plan would ensure that each state of the Federation would have at least one high caliber federal university on a reasonably well-integrated campus; for this special resources would be used, both national resources and resources from international loans. The budgetary allocations from the Union to other official educational institutions and even a number of private institutions also reflect a concern for building an efficient and regionally balanced university system. Part of this policy is to address the need for regional relevance or a greater link between the target activities and the problems of the milieu wherein the educational institutions operate.
- 2.45 The combination of the policies described above point up a major federal priority for higher education: qualitative development of the federal universities in the less-developed regions of Brazil, so that their target activities may make a more effective contribution to the needs unique to those regions.

3. A halt to exaggerated growth

- 2.46 The finite supply of resources and the need to deal with many other social needs impose limits on the quantitative growth and qualitative development of higher education. The priority attached to the second therefore means a halt in the excessively rapid growth that the system of higher education was experiencing during the 1970's, and particularly during the first five years of that decade (1970-1975).
- 2.47 Furthermore, there was some concern that the proliferation of weak educational institutions might mean that poorly prepared professionals will be graduated which would in turn lead to unemployment and social unrest. Therefore, the government established more rigid regulations and controls on higher education, considerably slowed down the rate of growth during the second part of the last decade (1975-1980), and has slowed it even further during the 1980-1982 period.



- 2.48 MEC authorities are of the view that the circumstances that gave rise to this policy are still present, which is why they foresee that the policy will continue in the immediate future, without any basic change, although adjustments will be made to make room for a number of new study programs, which must be strictly justified.
- 2.49 The above described policies surface in programs conducted by the MEC to develop higher education. What follows is a description of the two biggest programs, for which there are specialized agencies within the Ministry (CAPES and CEDATE).<sup>1</sup>

#### 4. General and specialized training for professors

- 2.50 Even though there have long been programs to provide general and specialized training for professors, in 1961 the Office for Coordination of Advanced Training for High-level Personnel (CAPES) was established as a specialized organ of the MEC, to promote and administer those programs, which together would form a "national postgraduate plan."
- 2.51 Recognizing that the academic corps within the institutions of higher learning is a key element in qualitative development, the number of fellowships for professors was greatly increased as part of a national plan that also makes provision for training a group of high-caliber graduate students. During the second half of the last decade (1975-1980), the number of fellowships doubled, and increased in 1980 to 7,150 fellows taking courses in Brazil and 1,432 abroad. As a result of this CAPES program, which is complemented by a similar program of the "National Scientific and Technological Development Council" (CNPq), the number of professors with masters and/or PhDs in the higher education system in Brazil is increasing rapidly.

#### 5. Integration and development of the campuses

- 2.52 In the last 15 years, various programs have been conducted to construct and outfit university campuses. On the one hand these programs are designed to provide the material means required to increase the enrollment in higher education. On the other hand, they are designed to bring together in a single integrated campus the scattered and ill-equipped facilities of the schools that spawned the vast majority of Brazilian universities.
- 2.53 To develop these programs, federal budgetary allocations were used, as were IDB loans <sup>1/</sup> loans from foreign governments and from the Federal Economic Fund, with the resources of the Social Development Assistance Fund (FAS). Coordination of the preparations for and execution of these programs was initially entrusted to temporary specialized agencies, such as PREMESU (Program to Improve the Facilities in Higher Education), later transformed into a permanent organ (Coordination of Development of

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<sup>1/</sup> See Chapter III for an evaluation of these loans.

Higher Education Facilities). This Coordinating Office was incorporated in 1981 into a new permanent organ, the "Center for Development of and Technical Support for Education" (CEDATE), which also included other agencies of the MEC for the basic and intermediate levels of education.

- 2.54 The most recent construction and equipment programs involving university campuses have been oriented more toward integration of the campus and to satisfying material needs where qualitative development is concerned than to expanding student enrollment, the growth of which is now severely regulated. The elements of construction and equipping are coordinated with the capes component, i.e., providing general and specialized training to professors. Moreover, technical advisory assistance is included in connection with improving higher education, such as academic and administrative organization, curriculum planning, research methodology and extension, maintenance of laboratories, establishment of libraries and data systems.
- 2.55 Those programs assign priority to federal universities, not only because these are directly dependent upon the MEC but also because it is part of the general university development strategy in Brazil which places primary emphasis on consolidating a regionally balanced group of high-quality universities. These universities will be the basis for subsequent qualitative development of other educational institutions, both public and private. The higher education system, in turn, is of critical importance to improving other levels of education.

D. Association with other Educational Levels 1/

- 2.56 What follows is a brief summary of the characteristics, problems and trends in other levels of education in Brazil, ending with a description of how higher education interacts with those levels.

1. Pre-school education

- 2.57 Pre-school ("infantil") education is the education given to children from birth until 6 years of age. Normally, this education is given in the home in a nonformal manner; but there are also nursery schools, day-care centers, kindergartens and other centers of that type that see to the psycho-social and physiological development of the child. Formal education at this level is not compulsory, but rather optional.
- 2.58 During the 1970's, the system of pre-school educational establishment vastly increased. At the present time there are 15,000 centers and 59,000 teachers, and an enrollment of approximately 1.4 million children. Fifty-five percent of this enrollment is in public establishments (principally municipal and state). Forty-five percent is in private entities.

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1/ Annex 3 contains the statistical data in this regard.

- 2.59 Because of the importance of the first years in an individual's subsequent development, the MEC is of the view that many of the services at that level must still be expanded. One of the major problems that must be faced is the scarcity of specialized personnel for this type of education.

## 2. Basic education

- 2.60 Since 1971, elementary education or basic education has been given in 8 consecutive years of formal education, normally to children and youth from 7 to 14 years of age. Basic education was composed of what was once the 5-year elementary school and the former "gimnasio" or first cycle of secondary education, 3 to 4 years in length. This level of education is compulsory in Brazil for people in the age ranges mentioned above.
- 2.61 The basic education school system in 1980 involved around 200,000 units served by approximately 1.2 million teachers, administrators and school supervisors. It attended to 22.5 million students, 18.5 million of whom were between the ages of 7 and 14. This represented 78.7% of all children in Brazil in that age range. More than 5 million children from 17 to 14 years of age (21.3%) were not in the school system, particularly in rural areas and on the periphery of urban areas, even though school enrollment increased by 6.6 million between 1970 and 1980 (around 30%). Some 87.5% of the enrollment was in public education facilities, principally state and municipal.
- 2.62 The MEC's first priority is to see to it that all Brazilian children receive a high-quality, 8-year basic education. This goal must be accomplished by no later than the year 2000, and earlier if possible. Considering the rate of growth and economic potential of Brazil, this goal seems to be financially feasible. However, numerous socioeconomic difficulties must be dealt with. The major obstacles to achieving 100% enrollment from the first to the eighth grade are often caused by factors that have nothing to do with the school, such as the need to work very early on in life, dietary and health deficiencies, physical and psychological environments that are unsuitable for study in the home and other phenomena associated with poverty and socially peripheral status.
- 2.63 Within the academic area per se, the main problem is the qualifications of the teachers. Only 33.5% of the teachers in basic education in 1980 had completed normal studies or had obtained an undergraduate degree. Adding together the teachers who presently are in need of greater training and those that must be trained to handle the increased enrollment and to replace those that retire, over 1 million individuals will have to be trained in the next 17 years in order to accomplish the goal by the year 2000.

### 3. Secondary education

- 2.64 Secondary education or second "grau" education in Brazil is from 3 to 5 academic years and follows basic education. It offers a variety of options that include some element, to a greater or lesser degree, of job education. Some options focus mainly on general education with a view to preparing students for higher education; others offer "skills", either full or partial, to perform jobs in various sectors of economic activity.
- 2.65 Enrollment in secondary education is divided evenly between public and private establishments. The public establishments are principally state-run, but there are also municipal and federal establishments. Middle-level professional education or education for labor is, as a rule, stronger in the public schools than in the private schools.
- 2.66 The populace served by this level in 1980 was 2.8 million students in 7,419 establishments, with approximately 200,000 teachers. Secondary education is largely to be found in urban zones; there is also a notable geographic concentration, since 50% of the enrollment is to be found in only one region (the southeast). The schooling rate at this level of education is approximately 15% of the population between the ages of 15 and 19.
- 2.67 Enrollment in secondary education as well as higher education increased at very high rates in the 1970's. It almost tripled in only 10 years. Thus, it has the quality problems typically associated with very rapid expansion, complicated in this case by extensive controversy as to the content of the curricula.
- 2.68 In order to make some of the secondary education options terminal in nature, so as to allow graduates at that level to find employment readily, the technical content of the curricula was expanded. This was often done without the infrastructure necessary for this purpose or the specialized professors to provide the knowledge, information and skills required for the middle-level jobs in the various sectors of economic activity. The result was that only a small fraction of high-school graduates did in fact have those skills. Most continued to pursue their studies at a higher level. Since the content of general education also dropped, the average performance on admissions examinations to universities notably declined. This is undoubtedly one of the causes of the proliferation of separate schools and colleges, discussed earlier.
- 2.69 It is still important in Brazil to provide numerous options in technical education at the secondary level that will make it possible for a greater number of high school graduates to find productive employment. A key point in this is, again, adequate training of teachers for that type of education. Another key point is the MEC's policy to halt the exaggerated increase in the number of separate schools and colleges, since so long as low quality alternatives are available in higher education, high school graduates will continue to fill them, and the results will be very dubious from the standpoint of social utility.

#### 4. Interaction among the levels

- 2.70 The purpose of this section is to emphasize the systemic nature of the group of institutions within the educational sector and the difficulties in conducting far-reaching activities at only one level, without taking into account the circumstances of the other levels. In the earlier discussion of specific levels, interdependencies between the various levels were suggested, though no mention was made of the associations with other types of education, such as supplementary adult education, special education for the exceptional, and the education provided by establishments that train individuals for employment (SENAI and SENAC).
- 2.71 A very quick review of the fundamental interactions between the higher level of education and the other levels discussed shows the following:
- a) The training of professors, specialists, supervisors and school administrators needed at all educational levels is of critical importance to improving and satisfactorily developing the educational sector as a whole. Fundamentally, that training is the responsibility of higher education.
  - b) Higher education can also help to prepare diagnoses and to propose solutions, found through educational research, on all manner of pedagogical topics, teaching methods, curricular formats, teaching conditions, use of resources, the sector's relations with the productive units and with the communications media, the educational functions of the family, and many other topics relevant to the development of education in Brazil.
  - c) The extension courses offered by the universities, the advisory assistance and support that they provide to other educational institutions, the publications, lectures, seminars and other events are an adequate means to transmit and spread educational knowledge useful at all levels. The experimental high schools that some universities manage are a means to test and spread innovation.
  - d) The educational options offered by the institutions of higher learning influence the expectations of the social sectors and determine the type of growth that the secondary level of education will experience.
  - e) There are also inverse relationships, the most important of which is the dependence that each level has on the aptitudes and knowledge base that the students bring with them. The higher level of education not only influences but is also deeply influenced by the other levels, in a complex network of interactions among the educational institutions.

### III. EVALUATION OF PAST OPERATIONS

This chapter offers a brief description of Bank participation in education, science and technology in Brazil and then presents a detailed evaluation of the two higher education projects in which the Bank has participated, with emphasis on the close relationship between these operations and the present program.

#### A. Bank Involvement in Education, Science and Technology

- 3.01 Since 1964 the Bank has participated in 10 projects for education, science and technology, totalling US\$200 million which, added to the amount of the local contribution, results in a grand total of US\$470 million. These operations have provided benefits to 73 university centers for basic education, 92 teachers' colleges, 13 federal universities, one state and one private university, and 34 centers and institutes for high-level scientific and technological research. The Bank also arranged for 200 technological service contracts to be granted for the development of the national industries.
- 3.02 Table 3-1 presents these activities in summary form.

TABLE 3-1

IDB INVOLVEMENT IN EDUCATION,  
SCIENCE AND TECHNOLOGY PROJECTS

<u>Loan No./ Amount Millions</u>	<u>Year</u>	<u>Objectives</u>	<u>Beneficiaries</u>	<u>Executing Agency</u>
<u>SCIENCE AND TECHNOLOGY</u>				
250/OC US\$6.2 361/SF US\$25	1975	Expansion of research and development infrastructure	<u>Technological Institutes:</u> IPT/Sao Paulo; CTA/Sao Paulo; CEPED/Bahia; USIMINAS/Minas Gerais; CEPEL/Rio Janeiro; CETEM/Rio Janeiro <u>Universities:</u> FUC/Rio Janeiro; FUPSCAR/Sao Paulo; UNICAMP/Campinas, Sao Paulo; FUB/Brasilia	FINEP
327/OC	1977	Strengthening of scientific and technological infrastructure	<u>Universities:</u> FUPSCAR; UNICAMP; Paraiba; Para; FUB; Sao Paulo, Rio de Janeiro; Pernambuco; and Santa Catarina. <u>Research Centers:</u> CETEC/Minas Gerais; CEPED/Bahia; CIENTEC/Rio Grande do Sul; TELEBRAS/Sao Paulo; COPEL/Parana; CEPEL/Rio de Janeiro; INPA/Amazonas; and INPM/Rio de Janeiro <u>Manpower Training:</u> CNPq/Brasilia	FINEP
498/SF US\$20	1977	Technological development of industry	<u>Services to Industry:</u> 200 service contracts	FINEP
<u>INTERMEDIATE/TECHNICAL/PROFESSIONAL EDUCATION</u>				
145/SF US\$20	1967	Improvement of technical training and industrial on-the-job instruction	33 institutions for intermediate, technical, and manpower training throughout the country	CEPETI
379/SF US\$16	1974	Development of intermediate, technical and professional education	26 professional training centers for industry; 4 professional training centers for business; 13 agricultural colleges for the primary sector; 13 interscholastic centers for the secondary sector; and 3 business schools for tertiary sector.	PREMEN
<u>HIGHER EDUCATION</u>				
85/SF US\$4	1964	Equipment for graduate-level centers of professional enhancement.	73 university centers distributed throughout 10 regions	CAPEP
157/SF US\$425	1967	Expansion and improvement of Agricultural and Stockbreeding Sciences and Technologies	Federal Universities of Rio de Janeiro, Sao Paulo, Brasilia, Minas Gerais, Viçosa, Ceara, Pernambuco, Bahia and Universidad Catolica of Rio de Janeiro.	CEPES
305/OC US\$20 459/SF US\$30	1976	Expansion and improvement of higher education	<u>Federal Universities:</u> Brasilia; Rio Grande do Norte, Paraiba; Para; Sergipe; Espirito Santo; and Bahia.	PREMESU/ CEDATE

- 3.03 An operation for preinvestment and science and technology (BR-0138) is now in the final stages of processing. Its estimated cost is US\$100 million, of which US\$50 million will be contributed by the Bank.
- 3.04 The operations listed in Table 3-1 are evaluated in Document PR-716 and in Document PR-1222-A, mentioned in the paragraph above. Below is a detailed evaluation of the two operations closely linked with the program described herein.

B. Evaluation of Higher Education Operations

1. Evaluation of Loan 158/SF-BR

- 3.05 On December 6, 1967 the Bank signed a loan contract with the Government of Brazil for a US\$25 million program designed to expand and improve higher education in seven federal universities (Rio de Janeiro, Brasília, Minas Gerais, Viçosa, Ceará, Pernambuco and Bahia), one state university (São Paulo) and one private university (Pontificia Católica de Rio de Janeiro).
- 3.06 The following activities were envisaged as part of this program:
- i) Construction and enlargement of buildings;
  - ii) Procurement of equipment for education and research;
  - iii) Procurement of bibliographic material; and
  - iv) Delivery of technical assistance for
    - teacher training;
    - organization and upgrading of new academic structures;
    - planning and organization of a central library; and
    - modernization of university administration.
- a) Program implementation
- 3.07 The program was implemented by the Comissão Especial para Execução do Plano de Expansão e Melhoramento de Ensino Superior (Special Commission for the Implementation of the Higher Education Expansion and Improvement Plan - CEPES). This organization was established by virtue of Decree 60.461 of March 13, 1967. <sup>1/</sup>
- 3.08 This executing agency undertook to enhance its own capacities and gradually adapt to the needs of the program, which eventually resulted in a satisfactory supervisory performance. In the final stage of this process, which began in mid-1972 with the appointment of a Program Head, CEPES took on a more markedly executive role and was finally replaced by PREMESU, an executing agency that was specifically connected to DAU, which increased its authority in dealing with DAU-associated universities.

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<sup>1/</sup> By virtue of Decree 73.857, on March 14, 1974, CEPES changed its name to PREMESU.



- 3.09 In compliance with the loan contract, a technical-administrative unit (UTA) was established in each university involved in the program in order to see to it that the respective projects were carried out. Owing to a lack of funds and manpower, it took some time for these units to be organized. These problems were eventually solved, however, and the UTAs gained more and more experience, until they were able to actively assist in the planning and supervision of their particular projects. Although these units now tend to be involved in specific activities, such as construction or supply of equipment, most universities benefitted from their establishment, and the units became permanent agencies.

(i) Disbursements

- 3.10 The disbursement deadline established in the loan contract was extended three times. The first extension was for 18 months, the second, for 12 months, and the third, for 6 months. The program therefore took 36 months longer than the 42-month period originally anticipated.
- 3.11 Planned construction work was almost all completed within the established periods, and practically the only causes for delay were problems in the purchase of equipment, particularly for the federal universities of Rio de Janeiro and São Paulo, and the slow pace at which technical assistance was provided.

(ii) Program cost

- 3.12 The program cost was originally estimated at US\$45.4 million, with US\$25 million to be contributed by the Bank and US\$20.4 million by the local counterpart. By the end of the program, expenditures of local counterpart funds had reached US\$25.9 million, an increase of US\$5.5 million over the expected amount. In the final program the amount of US\$86,800, in unused foreign exchange, was canceled in the IDB loan. Most of the additional funds spent by the local counterpart were used for construction. Expenditures for program administration also turned out to be greater than the original estimate because of the three additional years of operation. The table on the following page compares the distribution of resources at the beginning and at the end of the program.

Table 3-2

(In US\$ thousands)

<u>Investment Category</u>	<u>Original Program Contribution</u>			<u>Final Program Contribution</u>		
	<u>IDB</u>	<u>Local</u>	<u>Total</u>	<u>IDB</u>	<u>Local</u>	<u>Total</u>
Construction	12,230	13,130	25,360	12,948	19,179	32,137
Equipment	10,835	4,580	15,415	11,180	4,676	15,856
Technical assistance	535	220	755	535	307	842
Financial expenditures	-	1,000	1,000	-	976	976
Administrative expenditures	-	480	480	-	800	800
Incidentals	1,150	990	2,140	-	-	-
IDB inspection	250	-	250	250	-	250
Total	25,000	20,400	45,400	24,913	25,938	50,851
	=====	=====	=====	=====	=====	=====
Percentage	55.1	44.9	100.0	49.0	51.0	100.0

(iii) Resource utilization

- 3.13 Of the three main categories, that of constructions, which accounted for 63% of investments by the end of the program, was nearly completed by late 1972. Generally speaking, the quality of the constructions was good, and they are being used as planned. Building additional wings onto already existing facilities not only promoted greater functionalism in the use of time and space but also helped improve the quality of education and research. The average cost per square meter was US\$115, which is very reasonable compared to current prices for the same type of construction, which run no lower than US\$350/m<sup>2</sup>.
- 3.14 The amount of US\$15.8 million was used to purchase equipment, which accounts for 31.2% of the program's total value. This was one of the last program categories to be completed because it took a long time for detailed lists of equipment to be drawn up and for credit cards to be issued.
- 3.15 Provision was made for technical assistance in agreement ATF/SF-765-BR, which was signed simultaneously with Loan 158/SF-BR in December 1967. Changes were made in this component on January 9, 1973, when its principal objectives were stipulated as cooperating in: (a) construction planning and teacher training in the Federal University of Ceará, and training only for the Federal University of Bahia; (b) planning a central library for the Federal University of Pernambuco; and (c) helping the nine universities in the program examine their administrative infra-

structure and implement the recommendations put forth concerning the organization and operation of these universities, their financial, physical, and material resources, and various activities of teaching, research and publication.

- 3.16 In the Federal Universities of Ceará, Pernambuco and Bahia, advisory services were satisfactorily performed. Technical assistance gave rise to a series of recommendations designed to improve efficiency in the seven universities receiving services. For the first time in the history of higher education in Brazil the administrations became involved in the use of time and space within their universities. It was also the first time the problem of maintenance of the university campuses was considered. Technical assistance showed good results in instituting information systems for both the follow-up of structural changes being carried out in institutions of higher learning as a result of the University Reform and as an aid to improving university administration at the seven institutions involved and others that participated in seminars and received publications on the work done. Advisory services also made it possible for the universities to communicate with one another, sharing common problems, experiences and methods that could lead to their solution. This, in addition to the training of personnel in some of the universities, is probably the most significant consequence of the financial cooperation provided by the Bank for the future development of Brazil's universities.

(iv) Conditions of the contract

- 3.17 Both the executing agency and the universities that participated in the program proved generally satisfactory in their compliance with the conditions of the contract.

2. Evaluation of Loans 305/OC and 459/SF-BR

- 3.18 On February 11, 1976 the Bank and the Government of Brazil signed contracts on Loans 305/OC-BR and 459/SF-BR in the amounts of US\$20 million and US\$30 million, respectively. The general objective of the program was to broaden and improve higher education in seven federal universities (Pará, Rio Grande do Norte, Paraíba, Sergipe, Bahia, Espírito Santo and Brasília).

- 3.19 The specific objectives of the program were as follows:

- (i) To help fulfill the goals set by the University Reform in Brazil, providing the universities with the necessary means for improving the quality and efficiency of higher education and broadening functions in the area of teaching, research and university extension.

- (ii) To facilitate the adaptation of higher education curricula such that emphasis is placed on those teaching and research programs with implications for the regional goals of economic and social development.
- (iii) To strengthen the capacity of participating universities to adequately meet the great demand for the training of highly qualified professionals through the prompt establishment of new economic development projects and the institution of a national policy on educational development.
- (iv) To provide the necessary facilities for the integration and functional coordination of academic units in each participating university in order to streamline resource utilization and avoid duplication of effort.
- (v) To help improve planning, administration, control, information and maintenance systems in the universities.

3.20 In order to accomplish these objectives, the program envisages the following activities:

- (i) Expansion of the teaching staff of the universities by granting a greater proportion of professors full-time status, especially in basic and technological disciplines.
- (ii) Teacher training in order to raise the technical level of education and research, through graduate fellowships in other universities at home and abroad.
- (iii) Technical advisory services provided through individual consultants, agreements with specialized organizations or with other Brazilian universities, and the program's central executing agency, in order to improve teaching and research methods, administration and accounting systems, and practices concerning the planning, utilization and maintenance of facilities at the participating universities.
- (iv) Procurement and use of specialized teaching and research equipment, office furnishings and accessories, books and publications for the teaching programs at the universities.
- (v) Construction of buildings for classrooms, laboratories, administrative offices, general services and infrastructure works, in order to foster the integration of various university activities and promote better use of human and material resources in accordance with the policies of the University Reform.

a) Program implementation

- 3.21 During the first half of 1982 the disbursement period was completed, and all uncommitted, undisbursed funds were cancelled. The final evaluation of this operation has not yet been done, so a partial evaluation is presented here.
- 3.22 Partial results of the evaluation show that the objectives and goals were fully met. For instance, it may be pointed out that:
- (i) Authorities hired 4,621 new professors, of the target of 3,191, thus exceeding the target by 1,430. Plans were made to train approximately 1,300 and 1,771 were graduates of various programs including master's and doctoral programs, thus exceeding the target by 471.
  - (ii) Improvements were made in university facilities with the construction and furnishing of 430,000 m<sup>2</sup> of space, which is over 60% more than anticipated.
  - (iii) Equipment and material were procured and installed in 370 laboratories used for basic and professional training.
  - (iv) The university libraries were expanded with the procurement of 354,000 new books and 15,000 new technical and scientific journals.
- 3.23 By making improvements in the participating universities, the program was able to make room for 29,000 new students and establish 71 new undergraduate majors and 54 graduate majors in those areas of relevance to the country's economic development, such as agricultural, technological, exact, biological and human sciences. In particular, programs in education offered greater opportunities for the rapid training of primary and secondary school teachers, which is now being recognized as one of the most urgent priorities of the country's educational system.
- 3.24 Five of the seven universities that received services established Rural University Centers for Community Training and Action (CRUTAC). Their success is yet to be assessed, but these centers seems to show promise in producing a significant impact on Brazil's rural areas.
- 3.25 Furthermore, the participating universities gave impetus to the School-Business-Government Integration Program, increasing student involvement in the industries of their fields by strengthening ties with the Oswaldo Lodi Institute, which is associated with the Industry Confederation and Federations.

(i) Disbursements

- 3.26 The original period for the first disbursement was extended for six months owing to minor problems in fulfilling prior conditions. The implementation period was extended twice, however, and the extensions were each 12 months, which increased this period from four to six years. There were basically two reasons for the delays: (a) In 1979 and 1980 the country's construction industries were partially paralyzed, which had an impact on works and buildings in four of the participating universities; and (b) there were increased national controls on the import of goods, especially laboratory equipment.

(ii) Program cost

- 3.27 The cost of the program was originally estimated at US\$150 million but turned out to be US\$180 million by the time of its completion. In the final program, approximately US\$800,000 <sup>1/</sup> of the Bank loan (305/OC-BR) was cancelled, but on the other hand, the local contribution, which was originally US\$100 million, was increased to US\$130 million.

(iii) Executing unit

- 3.28 The program's executing unit, CEDATE, proved highly efficient in coordinating, supervising, and implementing the program. The executing units in each participating university also performed with satisfactory efficiency.
- 3.29 As a consequence of the efforts of the universities' executing units, each institution currently has a basic working team to carry out normal maintenance tasks and minor construction as necessary.

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<sup>1/</sup> These were unused funds in foreign exchange.

#### IV. PROGRAM SCHEME

This chapter offers a general overview of the program, a diagnostic analysis of the four universities in the representative sample and an indication of the scope of the projects proposed for each one.

##### A. Brazil's University Reform

- 4.01 University development is an essential part of Brazil's effort to build a developed and independent nation. Because every modern society rests on scientific and technological knowledge and other elements of reason, no country could develop independently without the contribution of agents responsible for producing, preserving, transmitting and disseminating these elements. Universities are not the only institutions specialized in knowledge management, but they are undoubtedly the main ones, and society has no other superior institutional means that could replace them in the final analysis.
- 4.02 In the specific case of Brazil, the rapid growth of production in all sectors implies a need for the education of professionals in the most widely varied fields, which is, obviously, one of the tasks of a university. If the country is to develop its natural resources in a rational way, it will need many different kinds of knowledge, some of which are yet to be discovered or adapted and which could evolve through university research. Universities also play a fundamentally important role in the generation of values and attitudes, the creation and reproduction of national culture and the dissemination of all types of knowledge and every kind of application. All in all, universities are institutions of primary importance in the long term, as they will be instrumental in helping Brazil fulfill its hopes for full development of its great potential.
- 4.03 Although schools for advanced study have existed since the 17th century, university development is a relatively recent phenomenon in the country. The training of elites traditionally took place in isolated "faculties" which were not connected in any organizational scheme and which had only a few research and extension activities, part-time professors, and fairly uncreative teaching methods. The juxtaposition of these schools and faculties resulted in the first universities in Brazil in the first half of this century. The great majority of universities, however, were generated in this way after 1950.
- 4.04 At the end of the 1950's and the beginning of the 1960's there was a great deal of questioning, socially speaking, about the type of university prevalent in Brazil. There was questioning of the role university institutions were playing in society, their lack of relevance in meeting

real development needs, and their disassociation from the local and regional sphere. Universities were criticized for their lack of integrated internal structure and were accused of catering to elites at a time when Brazil was one of the Latin American countries with relatively few universities for its total population. All this questioning led to two important developments: the Brazilian University Reform and the explosive increase in student enrollment in the past 20 years, and especially in the past ten years.

- 4.05 The laws of the reform stipulated that the basic functions or activities/ends of the university would be teaching, research and extension, viewed as a response to real needs in any of Brazil's various regions. These activities would have to support and complement one another, while the rest of the activities/means in the institution would be subordinate to them.
- 4.06 Furthermore, compulsory policies of integrating the units and disciplines of the university were established to counteract the isolation and lack of connection among the units which characterized the prevailing structure at that time. The reform specified an organizational model which defined "department" as the smallest fraction of the university structure, prohibited duplication of efforts for identical or equivalent ends, and stipulated that all academic personnel in allied disciplines previously under separate units serving only one school or faculty should be joined in a single department. At that point, each department would serve the entire university. For historical reasons, the largest units, containing several different departments, officially adopted particular names and were most frequently called "centers", "schools" and "institutes".
- 4.07 Legislation was also enacted on the specialization and concentration of effort by teaching personnel, basic common curricula in programs of study, entrance exams, and many other topics connected with the operation of a university. Subsequent restructuring resulted in a kind of university that was entirely different from the one that existed before the reform. Although there are more private institutions of higher education than public ones, the former continue to be predominantly isolated schools or faculties which are not recognized as universities, even though they may legally confer degrees for professional practice.
- 4.08 One of the greatest problems faced by the University Reform -- one which has yet to be completely overcome -- is the scattered location of facilities housing different parts of the university in cities. When the reform ordered the integration of functions, units and disciplines in the university, it also assumed that there would be physical integration, and this could not be done with obsolete buildings in poor condition stretched out across various parts of the city.



- 4.09 In 1975 21 federal universities with special problems of scattered facilities or insufficient funds for compliance with the provisions of the reform were identified. The selection criteria were relative need and adequate regional distribution of federal universities. (These are almost the same criteria presented in Chapter V, The Program). MEC assisted six of these universities with Brazil's own resources and arranged with the Bank for loans 305/OC-BR and 459/SF-BR to be used to finance the investments of seven others. Eight universities could not be assisted at all by these programs.
- 4.10 These eight institutions, plus one other school that was still being organized in 1975 (Universidade Federal de Acre), are the object of the present program. Allowance has been made for changes and additions in this program to ensure that it meets the selection criteria specified below.
- 4.11 The following nine universities were identified and selected to participate in the program:

Northern Region

Fundação Universidade Federal de Acre (UFAC)  
Fundação Universidade de Amazonas (FUAM)

Northeastern Region

Fundação Universidade de Maranhão (FUMA)  
Universidade Federal de Ceará (UFCE)  
Universidade Federal de Alagoas (UFAL)

Southeastern Region

Universidade Federal Fluminense (UFFL)  
Universidade Federal de Juiz de Fora (UFJF)

Central Eastern Region

Universidade Federal de Goiás (UFGO)  
Universidade Federal de Mato Grosso (UFMT)

B. The Program Within the Current Context

- 4.12 Student enrollment in institutions of higher education in Brazil increased more than 13-fold over 20 years, increasing from approximately 100,000 in 1960 to over 1,300,000 in 1980. In the 1970's alone, student enrollment increased by nearly 900,000. This expansion was not accompanied by a uniform increase in quality in all areas, so there is considerable unevenness, with some excellent centers of international reknown and some less qualified institutions. There are also great regional disparities.

- 4.13 The program described herein is an effort to strengthen relatively needy federal universities to better meet the requirements of the University Reform and more effectively contribute to the construction of a new Brazil, with special attention to the needs of the local and regional environment in which these schools are located. The program has a certain degree of continuity with the previous operations in which the Bank was involved, but its objectives place greater emphasis on the qualitative aspects of university development.
- 4.14 This program is being proposed at a time of great national interest in universities. There is concern that the rapid expansion of enrollment may have brought about some deterioration in the overall quality of higher education, owing to the establishment of low quality, poorly maintained institutions. A presidential decree is in effect until December 1982 to prohibit the establishment of new universities and the creation of additional places in new undergraduate-level programs (but not graduate-level courses). There is a national debate as to whether higher education in official institutions should be paid for by students who can afford tuition. There is a study being conducted to determine a proper legal status for federal universities, since the so-called "autarchies" have different salary schedules from the "foundations". All of this seems to be part of the vitality of Brazilian universities, however, just as there are questions coming out of those very same universities on the country's development model and the role the institutions should play in it.
- 4.15 Official statements from the Brazilian government have been reflecting increasing concern over the large deficit and the persisting problems of quality of basic education in the country's rural and peripheral urban zones. To raise the quality of education at this level, it will be absolutely essential to focus efforts on university-level training of teachers and educational research and extension, and this is where basic education is linked to this program. Because of the interaction that occurs among various components of the educational system as a whole, improvement of lower educational levels is not only stimulated by action at higher levels but actually depends on these higher levels to provide the teachers, supervisors and directives they need.

C. Selection of the Representative Sample

- 4.16 In view of the important domestic changes now taking place in Brazil, such as the conversion of territories into States, shifts in the economic frontier, major government projects, and new discoveries of mineral deposits, it is entirely possible that additional changes will need to be made in the program during the implementation period. This is why it was necessary to select a representative sample of the program for purposes of illustration and analysis.

4.17 The Bank has worked jointly with MEC/CEDATE to select the four universities for detailed consideration of a representative sample. The selection was made in accordance with the following criteria:

- a) Regional representativeness in the program. Because the program includes universities from four very different regions of Brazil - the North, Northeast, Central West, and Southeast - it was considered important to include one university from each region in the sample.
- b) Representative components and adequate volume. The university to be selected in each region should be involved in enough different projects to be representative of the region. Specifically, it should contain a varied group of elements within each component of the program, and it should preferably be the institution that would use the most program resources in its region.
- c) Institutional diversity of the universities selected. Considering that there is great heterogeneity within Brazil's university system and even within the federal system of higher education, the group of universities selected should include institutions of various sizes, degrees of university development and legal status (federal "autarchies" and "foundations").

4.18 Using these criteria, the following institutions were selected to participate in the representative sample: a) the Universidade Federal Fluminense (UFFL), b) the Universidade Federal de Goiás (UFGO), c) the Fundação Universidade de Amazonas (FUAM), and d) the Universidade Federal de Ceará (UFCE).

4.19 The cost of projects in these four universities accounts for 65.3% of the total cost of the program, as shown in the last column of the table below:

Table 4-1

Univer- sity	Region	Size of univer- sity 1/	Cost of the project in thousands of \$	Cost of the project as % of funds for region	Cost of the project as % of the total cost of the Program
UFFL	Southeast	Large	47,700	78.2	23.8
UFGO	Central-West	Medium	18,950	65.3	9.5
FUAM	North	Medium	24,650	74.0	12.3
UFCE	Northeast	Medium-large	39,450	51.4	19.7
					<u>65.3</u>
					===

1/ Small universities are considered to be those with less than 5,000 regular students; medium are those with between 5,000 and 10,000 students; medium-large, between 10,000 and 15,000; and large, more than 15,000.

D. Diagnostic Analysis of the Universities and Their Project Schemes

4.20 In order to conceptualize the specific projects in a way that would take into account the requirements of the University Reform and the particular needs of each institution, a diagnostic analysis of the situation in each university was needed.

4.21 A brief summary of the analysis done for the four universities selected for the representative sample is presented below with a basic description of the projects at each institution.

1. Universidade Federal Fluminense (UFFL)

a) Location

4.22 Located in Niteroi, in the State of Rio de Janeiro (southeastern region), across from the city of the same name, UFFL is the participating university with the greatest number of regular students (19,104) and professors (2,038) (PETI equivalence: 1/ 1,556). It is a federal "autarchy" and was founded in 1960. As far as its location and size are concerned, UFFL is atypical for the program; but the orientation of its activity toward the interior of the state (the "baixada fluminense" and the north of the State, with problems similar to those of the Brazilian Northwest) and some of its internal characteristics make it very like other universities included in the program.

b) Brief characterization of situation in the university

4.23 The most easily identifiable problem at present is the precarious state and scattered location of the university's buildings. There are also related problems of integration and separate identity. In terms of space, UFFL is one of the neediest universities in the federal system: it has approximately 2 m<sup>2</sup> of usable academic area per student. Congestion caused by too many people and too much furniture and equipment in small, obsolete buildings present serious obstacles to work at the university. There is little space outside of the classrooms for the professors to work, so hundreds of full-time instructors are almost never on campus. Furthermore the facilities are scattered throughout the metropolitan area of Niteroi and there are certain problems of academic organization - such as a lack of strong coordinating units - which aggravate the problem of insufficient internal integration. The presence in nearby Rio de Janeiro of well-known national and international academic centers (such as the Federal University of Rio de Janeiro and the Fundação Getulio Vargas) pose a problem for UFFL in its efforts to establish its own identity.

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1/ PETI: Equivalent number of full-time professors.

- 4.24 While problems do exist, UFFL also has great potential. In particular, the institution has a considerable concentration of talent -over 2,000 professors in a wide variety of fields and it is developing a regional university vocational program, which distinguishes it from other centers in the city of Rio de Janeiro.

c) The proposed project

- 4.25 For the reasons explained above, the UFFL project a) places emphasis on research and extension activities connected with the examination and solution of problems specific to the interior of the State of Rio de Janeiro; b) includes a strong focus on the construction of buildings needed to solve the problems of unsufficient facilities in scattered locations, and c) plans to establish new units for coordination and integration. There is no great danger that the current regional emphasis will lead to neglect of more general basic knowledge. UFFL already has strong departments in the basic disciplines and will continue to train professors who already have knowledge in those fields.

2. Universidade Federal de Goiás (UFGO)

a) Location

- 4.26 Located in Goiannia, in the State of Goiás (central-western region) UFGO is a medium-size university of the federal system. It has 8,192 regular students and 1,098 professors (PETI equivalent is 821). UFGO is a federal "autarchy" and was founded in 1960.

b) Brief characterization of situation in the university

- 4.27 For the first time in the history of the country, a woman has been appointed to the highest office of a federal university. In 1982, the female president of this university appointed an entirely new executive staff as part of a scheme of renovation for the institution's activities. The idea is basically to steer the university toward its own environment in order to meet the needs of the region, and from there, to reconsider education and research as well.
- 4.28 The present board of directors of UFGO previously spent many years in the field of university extension. They came to the university directly from that sector of activity and are of the opinion that the institution can only be truly relevant to the region by committing itself to directly serve the population there. This idea is not new to Brazil. It lies at the root of many "interiorização" efforts carried out by Brazilian universities in 1970 and even by national-level programs such as the famous "Rondon Project" (a university volunteer service in which participants would live in distant places in other regions). This concept is particularly emphasized by the new UFGO administration, however, which is directed by a core of truly far-seeing, dedicated people united in their efforts.

- 4.29 These ideas have provided a basis for the preparation of the "UFGO Guidelines" which identify certain obstacles, among them the following: a) in order to carry out the guidelines, a type of attitude that is unusual for a traditional university community will be needed. In addition, a large percentage of the teaching and administrative staff will require more training and opportunity for specialization; and b) UFGO has integration problems generated by its scattered facilities and lack of proper organization (more than 20 different units fall directly under the responsibility of the president's office).

c) The proposed project

- 4.30 The UFGO project emphasizes: a) the restatement of the institution's activities/ends in terms of the view summarized above; b) great emphasis on training, mainly in-service training, of the teaching and administrative staff; c) works, buildings, and remodeling needed for the proper operation of the institution; and d) changes in the organizational and administrative structure of the university.

3. Fundação Universidade do Amazonas (FUAM)

a) Location

- 4.31 Located in Manaus, the Amazonas State capital (northern region), FUAM is a medium-size university of the federal system. It has a total enrollment of 6,735 regular students and a staff of 769 professors (PETI equivalence is 543). Legally, the university is a federal "foundation" and was founded in 1962.

b) Brief characterization of situation in the university

- 4.32 Like other universities that do not yet have an integrated campus and operate out of inadequate and scattered facilities, FUAM considers its greatest problem to be that of space. This is indeed an important problem for the university at this time. However, since it is the only university in a state with a surface area greater than one and a half million square kilometers, with tremendous natural wealth and untapped potential, it is also true that FUAM has a long road ahead of it in order to achieve its goal activities. Only 13.4% of the professors have masters and/or doctoral degrees, one of the lowest figures for the federal system (less than one-half the average for the federal universities). The institution's location in Manaus necessarily implies less contact with the universities in the rest of Brazil and less capacity for attracting a specialized and sufficiently diversified academic staff. These factors have a somewhat negative impact on general creativity in the university.
- 4.33 FUAM's proximity to the "Instituto Nacional de Pesquisas da Amazonia" (INPA), a center for scientific research on the region's forest and water resources (established and operated in Manaus by CNPq) gives the

university very promising potential. The city's rapid industrial development, which began in 1968 after the establishment of the "Manaus Free Zone", also provides university activities with a considerable source of stimulus. The demand for study is extraordinarily high (10 candidates for every available place).

c) The proposed project

- 4.34 The main components of the FUAM project are to: a) achieve more contact and cooperation with INPA; b) make greater study of the positive and negative aspects of the "free zones", in order to better cooperate in the industrial and urban development of Manaus; c) build and equip an integrated campus; and d) achieve more specialization among the academic staff.

4. Universidade Federal de Ceará (UFCE)

a) Location

- 4.35 Located in Fortaleza, in the State of Ceará (northeastern region) UFCE is a federal "autarchy", founded in 1954. With the exception of the Universidade Federal Fluminense, UFCE has the greatest number of students (14,275) and professors (1,303) (PETI equivalence is 978) of the universities identified for the program participation.

b) Brief characterization of situation in the university

- 4.36 Even though it is located in one of the least developed regions of Brazil, UFCE is probably, all in all, the most complete of the participating universities. It offers the greatest and widest variety of programs of study. The percentage of professors with masters and/or doctoral degrees (34.6%) is higher than the average for the federal universities (28.4%), and nearly 10 points ahead of its closest competitor among the nine universities identified. It has excellent academic and administrative organization, and the institution's internal efficiency indicators are also relatively high. Its contributions to the recent development of Ceará are particularly noteworthy. The Center for Agricultural Sciences, for instance, has been directly involved in the development of almost all varieties of beans currently cultivated in the state. It also introduced sorghum as a crop, made important contributions to the improvement of large fiber cotton, of rice and of manioc, assisted in developing tropical fruit technology, participated in the genetic enhancement of beef cattle and was involved in regulating lobster fishing.
- 4.37 UFCE was one of the universities to participate in global program 158/SF-BR in 1967. At that time the construction and furnishing of buildings was financed for the Technological Center, which was moved to the Pici campus. UFCE has two other campuses (Benfica and Parangabucu) and five more large academic centers that were not included in the

program. CNPq has also included UFCE in a program of Alternative Technology Development for the Northwest, which has been submitted to the consideration of the Bank (BR-0168). That program only considers specific research projects of the Center for Agricultural Sciences, however. The special attention that MEC and CNPq have given UFCE is a reflection of this university's proven importance for the development of the Brazilian northwest.

- 4.38 UFCE's main tasks at present seem to involve consolidation. Internal development has been somewhat uneven: some units are quite a bit more advanced than others, there are weak points and lacks in various sectors, and the changing needs of the environment require many adjustments and modifications. On a physical level in particular, the university's operation on three different campuses, with other scattered facilities that are in poor condition, poses a problem for the progress of the various units. This problem originated with the very history of UFCE, as it was established as an association of isolated schools and faculties which had previously operated in various places, some very far from others.

c) The proposed project

- 4.39 The basic purposes of the UFCE project are to: a) continue with the development of activities/ends that are highly relevant to the state of Ceará and the Brazilian northwest; b) construct, remodel and equip buildings according to a facility integration and development plan; and c) to achieve progress in the training of the university's teaching and administrative staff.



## V. THE PROGRAM

This chapter presents the purposes, goals and cost of the program, together with details on the program's components, the criteria for the selection of universities, and a detailed description of the projects of the representative sample

### A. General Purpose

5.01 The purposes of the program are as follows:

1. To improve the quality of the education offered in the participating federal universities.
2. To increase the capacity of the universities to relate adequately to the setting in which they function through programs of teaching, research and extension which meet local and regional development needs.
3. To contribute to consolidation of the Brazilian University Reform by strengthening the neediest institutions and reducing disparities in the federal system of higher education.

### B. Goals

5.02 During the period of execution of the program it is proposed to achieve the following verifiable goals in the end or substantive activities of the university (instruction, research, and extension):

1. A restructuring of the programs of study and a revision of curricula in accordance with the country's needs. This restructuring will not include net additions to the total seating capacity in the first year of the participating universities.
2. An increase in the proportion of faculty actually doing research.
3. A redirection of the knowledge-generating effort to put more emphasis on applied research of use for the development of the region in which a university is located. This emphasis is to be understood not as neglect or turning aside from basic, general knowledge, but as the proper cultivation and use of that knowledge.
4. The conduct of teacher training and education research programs designed for improving the basic and secondary instruction system of the participating states.

5. The conduct of university extension programs in the areas of education, health, sanitation, housing, nutrition, agricultural, mining and industrial production, nonconventional energy sources, communications, cultural development, and others of relevance to conditions in each state and region.

5.03 The usable measurable results looked forward to during the period of execution of the program are as follows:

1. The training of about 500 university instructors in master's and doctoral programs (both in Brazil and abroad) and of about 2,000 instructors in specialization courses in the country. The proportion of instructors holding master's degrees and doctorates will rise to not less than 20% at the neediest universities (the average for the federal system was 28.3% in 1982).
2. The holding of about 400 training and specialization courses for about 7,000 technical and administrative staff members at the participating universities.
3. The provision of about 3,000 consultant-days of technical assistance to the participating universities in areas relating to consolidation of the University Reform and other purposes of the program.
4. The construction, outfitting and provision of requisite infrastructures for about 365,000 m<sup>2</sup> of buildings for laboratories, libraries, classrooms, and offices for faculty and administrative support; and the remodeling of about 29,000 m<sup>2</sup> of existing buildings. The proportion of academic area in good operating condition at the needier universities will be brought closer to the average for the federal system, which is 6.86 m<sup>2</sup> per enrolled student.
5. An increase of about 20% in the holdings of the participating universities.

C. Criteria for the Selection of Universities

- 5.04 Each of the projects to be included in this program must meet both of two requirements. The first requirement relates to the zone or region in which the university is located, and the second to the relative neediness of the university relative to the others in the federal system. Using the set of criteria explained below, nine federal universities have been identified that can participate in the global program: Acre Federal University (UFAC), the University of the Amazon (FUAM), Maranhão University (FUMA), Ceará Federal University (UFCE), Alagoas Federal University (UFAL), Juiz de Fora Federal University (UFJF), Fluminense Federal University (UFFL), Goiás Federal University (UFGO), and Mato Grosso Federal University (UFMT). Any change in or addition to the program must meet the same criteria.

1. Criteria regarding the zone or region in which the participating university is located

5.05 The criteria on the zone or region are as follows:

- a) Preference under the program will be given to the relatively less developed regions of Brazil. By way of exception, up to two universities may participate whose areas of influence are special zones of severe socioeconomic deprivation within relatively developed regions.
- b) The university must have identified regional problems and opportunities and have included in its academic program a strategy for dealing with them.

2. Criteria for establishing the relative need of each participating university

5.06 The program will admit to participation only universities that need to consolidate their campuses on the model prescribed under the Brazilian University Reform and whose faculties suffer from major deficiencies or shortcomings. These conditions will be considered met where the following circumstances are present:

a) In relation to physical installations:

- i) More than 30% of the university's physical installations are dispersed off campus, or
- ii) The academic area in good operating condition per student is less than the average for the federal universities (6.86 m<sup>2</sup>/student).

b) With regard to faculty:

- i) The proportion of faculty holding master's degrees or doctorates is less than 40%, or
- ii) The present number of enrolled students divided by the equivalent number of full-time teaching staff (PETI) is higher than the mean for the federal system (9.3).

5.07 The foregoing indexes will be complemented by the following manifestations of need for the selection of participating universities:

- i) Administrative weakness or insufficiently trained technical administrative personnel.
- ii) Glaring insufficiencies of equipment for teaching and research.
- iii) Poverty of the library holdings by comparison with those of other Brazilian federal universities.

5.08 Preference will be given under the program to the universities that can be reasonably classified, in terms of the indexes described above, as the neediest members of the federal system.

D. Conditions to be Met by the Project for each Participating University <sup>1/</sup>

- 5.09 The project for each university must be designed to accomplish the purposes and attain the goals of the global program. In particular, each project must include:
1. A plan of activities for the improvement of instruction at the university, including a revision of the curricula and the structures of the courses to meet the needs of the surrounding zone or region.
  2. A plan for expanding and improving the research conducted at the university, with a reasoned description of the broad academic areas in which it is desired to strengthen its research capabilities.
  3. A plan of university extension activity for cooperating in the improvement of basic and intermediate instruction in the zone or state and to contribute to the solution of problems in the region.
- 5.10 Though enrollments may gradually rise in response to improvements in the proportions of graduating students, retention rates, and internal efficiency, no project shall include components for the purpose of increasing the number of student places in the first year of admission.
- 5.11 The project will include the following components in proportions suited to the purposes in view and to the particular needs of each university: training and specialization for teaching and administrative personnel, the hiring of consultants, the construction and outfitting of laboratories, libraries, classrooms, offices for faculty, and premises for the university's administrative and general services. No provision will be made in the project for the construction of student dormitories or hospitals.
- 5.12 Each project must hew reasonably to the principle of accomplishing the desired purposes at the lowest possible cost. In particular, lavish buildings and decorations, relatively expensive structures and materials, and acquisitions of equipment not essential for attainment of the proposed goals will be avoided.
- 5.13 Each project will be accompanied by the reports, forecasts and justifications normally required by the Bank for specific project in higher education. In particular:

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<sup>1/</sup> These conditions will be reflected in the agreements between the MEC/CEDATE and the participating universities.

- a) The reports will be sufficiently informative to establish the frame of reference of the project and to show whether the previously stated criteria on the location and degree of need of the university involved are or are not satisfied.
- b) Estimates of the costs of the several components of the project will be included together with the calculations by which they were arrived at, the timetables for their execution, lists of equipment, complete draft projects and final plans for a significant portion of the physical plant works.
- c) There must be an analysis of the market for the services of professionals with university degrees.
- d) At each participating university a technical-administrative unit must be set up, and endowed with an adequate full-time staff, to coordinate the execution of all aspects of the project.

E. Description

1. Components of the program

- 5.14 The program includes components for the training of teaching and administrative staff, technical assistance, works and structures, and equipment.
  - a) Training of teaching and administrative staff
- 5.15 Graduate training will be provided for about 500 faculty members at the participating universities, of which 200 will take doctorates and 300 master's degrees. These numbers represent 5.7% of the total teaching staff at the nine universities (or 7.8% of the equivalent number of full-time teachers - PETI), which will raise the proportion of teaching staff with master's degrees or doctorates to not less than 20% at each university, and at the nine identified universities combines to a figure close to the present mean for the entire federal system (28.3% of the PETI).
- 5.16 More than 95% of the 300 master's degrees will be taken in Brazil, where such studies are less expensive and some universities offer excellent programs at that level in almost every academic field. About one fourth of the 200 doctorates will be taken abroad owing to the absence as yet of doctoral programs in some fields in the country. Altogether, about 11% of the scholarships are for study abroad.
- 5.17 Graduate studies may be pursued in the following fields, including specializations within them and combinations among them: i) the natural and exact sciences, ii) technology, iii) the health sciences, iv) the agricultural sciences, and v) economic, human and social sciences.
- 5.18 The basic criteria for the award of scholarships for master's degrees and doctorates will be the priorities of the areas of study at each

university and the qualifications of the candidate. Priority will be given to academic fields relating to the programs of instruction, research and university extension where those programs generate: a) special needs for teacher training, or b) the teaching staff is weaker than in other areas of the university or relative to the averages for the federal university system. Every candidate's qualifications will be evaluated in a rigorous selection process involving the departmental council, the research and graduate studies prorectory, and the rectory of the university (for presentation of the scholarship proposal), and for analysis and approval of the proposal the personnel, specialized consultants and Deliberative Council of the "Office for Coordinating the Improvement of the Personnel of Higher Education" (CAPES) of the MEC.

- 5.19 The entire teacher training component will be channeled through the CAPES, which for more than two decades has been developing and refining a system for the award of scholarships for graduate study. The procedures that the CAPES will use are described elsewhere, in the chapter on execution of the program. In keeping with national policy on the matter in Brazil, the scholarships will be nonreimbursable, but the candidate will be required to sign, before his scholarship is approved, a document by which he undertakes to work at the beneficiary university upon the completion of his scholarship studies.
- 5.20 In addition to the scholarships for master's and doctoral studies, the CAPES will offer, in coordination with the participating universities, a total of about 127 specialization courses for 2,000 university teaching staff in areas selected on the previously indicated criteria, but with more content on the teaching of those disciplines. These are courses of 360 to 500 hours of curricular work which faculty members ordinarily pursue at the same university during the intervals between academic years. These courses lead to a diploma of specialization that is regarded as of graduate level in the broad sense of the term.
- 5.21 Finally, about 400 specialization and training courses will be offered for 7,500 members of the technical-administrative staff of the participating universities, which account for more than 60 of the total number of such staff. These are courses of different durations (from a minimum of 20 hours to a maximum of 1,200, and a mean of about 250) and conducted by specialists from all over the country in several fields of importance for proper university administration, such as: training for laboratory workers, specialized machine operators, data processing and statistical personnel, library assistants and file clerks; university extension techniques, the maintenance of physical plant and equipment, personnel administration, financing and accounting administration, materials management, the physical preparation of teaching materials, the preparation and management of audiovisual materials, the management of university print shops and restaurants, the processing and management of academic records, microfilming, intramural communications, etc.

5.22 The program makes no provision for the hiring of new faculty. A current presidential decree temporarily bans such hirings save in cases in which they are expressly authorized by the President of the Republic himself. Hence, any hiring during the period of execution would be apart from the program, and involve resources other than those provided for it. It must also be borne in mind that increasing enrollments is no part of the program's purpose, and that the nine participating universities already have 8,766 teaching staff (the PETI equivalent of 6,433), of which only 19.9% have master's degrees or doctorates. It may hence be considered that, rather than hire new teaching staff, the participating universities need to raise the level of specialization of the staff they already have, which the present program is designed to do. This component of training for teaching staff and technical-administrative personnel will greatly strengthen the entire manpower base of the participating universities, which is essential for attainment of the stated qualitative goals.

b) Technical assistance

5.23 Under the program the participating universities will receive not less than 3,000 consultant-days of technical assistance, which includes more than 70 consultancies (with terms of reference and complete cost calculations). These consultancies will cover essentially four areas: 1/

- i) Academic area. Curriculum planning (the evaluation, design and introduction of subject matter and teaching methods in programs of study). The planning and administration of university research and extension programs.
- ii) Laboratory area. The proper installation, use and maintenance of specialized equipment in laboratories of different types.
- iii) Information processing area. The improvement and integration of systems of information, libraries, files, documentation centers and data processing.
- iv) organization and methods area. The restructuring of units and functions. The improvement of administrative procedures.

5.24 The MEC/CEDATE maintains, with the support of the CAPES, a classified inventory of more than 2,000 highly qualified Brazilian experts in the most widely varied areas of knowledge. It is anticipated, therefore, that most of the consultants will be hired in Brazil itself, which will result in the important by-product of enhancing interaction, communication and collaboration among universities throughout the country. The employment of international consultants in some cases is not ruled out, however.

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1/ Two detailed examples of technical assistance, one in the laboratory area and the other in administrative reorganization, are given in Annex 4.

c) Works and structures

- 5.25 Under the program a total of about 365,000 m<sup>2</sup> will be constructed in buildings for laboratories, libraries, classrooms and faculty offices, and premises for the universities administrative and general services; about 29,000 m<sup>2</sup> of existing buildings will be remodeled for the same purposes, and needed physical infrastructures will be completed, such as drinking water and drainage networks, electric power and telephone networks, access and on-campus roads, enclosed passageways between some buildings, walkways, and gardening works.
- 5.26 Of the nine identified universities, seven now have less than 4 square meters of academic area in good operating condition per student, whereas the average for the federal system of higher education is almost 7 m<sup>2</sup> per student; 5 of them have only 1.7 to 2.0 m<sup>2</sup> per student. In addition, the existing areas include many buildings scattered throughout the urban area, which prevents the university from operating as a unit as the Brazilian University Reform prescribes. At the end of the program, all the participating universities will have reasonably unified campuses.
- 5.27 The manuals and detailed design standards introduced by the MEC/CEDATE for this component of the program and obligatory for all the participating universities, and the procedures of CEDATE itself, require the avoidance of all unnecessary spaces, relatively expensive structures and materials, and all architectural embellishment.
- 5.28 The program will solve much, though not all, of the problem of lack of physical space needed for the proper functioning of the neediest of the universities in the federal system of higher education. (See Table 9-3, Chapter IX).

d) Equipment

- 5.29 The program provides for the acquisition and installation of equipment for laboratories and experiment centers in the basic natural sciences, technology, the agricultural sciences, the health sciences, and applied human and social sciences; and of equipment for central libraries and other academic and administrative units of the participating universities. The initial lists of equipment were drawn up on the basis of the requirements presented by the units themselves, but these requirements were then evaluated in detail by specialized consultants, whose recommendations (calling for substantial cuts) were followed by the CEDATE in preparing the lists presented to the Bank. 1/

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1/ Annex 5 contains a number of pages corresponding to the lists of equipment of one of the universities in the sample. The complete lists are contained in eight volumes that are kept in the files of PSD/PRA.



- 5.30 This component also includes the furnishings for the buildings to be built and remodeled under the program and the increase of about 20% in the library holdings of the participating universities (about 108,000 new volumes: an average of 12,000 per institution).

F. The Projects of the Universities in the Sample

1. Fluminense Federal University (UFFL) (US\$47,700,000)

a) Substantive activities

- 5.31 The UFFL now offers 29 undergraduate and 19 graduate programs at four major centers: general studies, technology, medical sciences, and applied social sciences.
- 5.32 In regard to teaching, the project proposes essentially to raise the quality of the instruction offered in the institutions by revising the curricula, upgrading the teaching staff, expanding and improving the physical means required for the activity, and coordinating it better with the research and extension activities. In the revision of curricula, consideration will be given to the advisability of starting new courses in geology, biological sciences, and rehabilitation of the disabled. This will be done, however, without any net increase in the total number of admissions in the first year of study, and hence by reducing the numbers of places available in other programs. As a result of the combination of measures called for under the project, the drop-out and repeater rates may be expected to go down, and hence the total enrollment to number between 21,000 and 23,000 regular students in the coming years (1984-1987).
- 5.33 The UFFL proposes to conduct 425 research projects distributed among the four centers. Examples of these research projects are the following: The UFFL will intensify the geochemical and biochemical research it has been engaged in on pollution of the waters in the coastal lagoons in the northern part of the state and in Guanabara bay, and the studies of the toxic content of products of animal origin. The scientific data produced by that research are generating an awareness of the present and potential dangers that those phenomena imply for the State of Rio de Janeiro; the findings of these studies constitute the basic knowledge needed for major state programs for the cleanup of waters and protection of the population. The UFFL's studies of the education system in the state are also important for the improvement of that system, particularly in the "baixada fluminense" and in the northern part of the state, where practically all the education indexes betray severe shortcomings, comparable to or worse than in the less developed regions of Brazil.
- 5.34 The UFFL proposes to conduct yearly not less than 33 extension courses, chiefly in areas of pedagogy for teachers from the state's hinterlands, in the agricultural sciences, and in the use and programming of computers. Moreover, every year hundreds of scientific, cultural and

artistic events will be held, and many papers and journals published. The institution owns and operates an intermediate-level agricultural technical school at Bom Jesú Itabaira (in the north of the state), out of which a CRUTAC (or Rural University Center for Community Training and Action). It also conducts community action programs in several localities in the interior of the state, such as the one at Anaiá, in São Gonçalo. The UFFL's 450-bed hospital provides essential services not only for the teaching of the health sciences, but also for the medical and hospital care of the poor population of Niterói and the interior of the state.

- 5.35 The UFFL attaches so much importance to its research and extension work that it proposes to invest, during the period of execution of the project, more than 50% of its basic resource, the working time of its academic staff, to it. This obviously ties in with the development of the institution's regional role, referred to previously. For the proper coordination of its activities, the UFFL will establish five prorectories: instruction, research and graduate studies, extension, planning, and student affairs.

b) Training of teaching and administrative staff

- 5.36 The project provides 43 scholarships for doctoral studies (30 in the country and 13 abroad) and 60 for studies toward master's degrees (in Brazil). The principal areas of these studies are health, education, agroindustrial technology, the natural and exact sciences, and social sciences. The proportion of teaching staff with master's degrees and doctorates will rise from 23.3% to 28.4% (slightly above the federal system's average). In addition, specialization courses will be offered for 100 instructors in the basic sciences and technology.
- 5.37 For the technical-administrative personnel, 53 courses will be offered for a total of 823 persons employed primarily in the operation and maintenance of different laboratories, computers and other equipment the use of which calls for some degree of specialized knowledge.

c) Technical assistance

- 5.38 The project includes six technical consultancies, three in the area of information processing (information systems, library integration, and the treatment of rare works in the documentation unit), one in the organization of prorectories, one in campus administration, and one in the preparation of manuals of technical instruction in the use of laboratories.

d) Works and structures

- 5.39 The university has scheduled the consolidation of its physical facilities in the urban area of Niterói to take advantage of urban infrastructures and services and of the many lands and buildings it owns in the city.

- 5.40 Except for the clusters in the areas of Valoguinho and Praia Vermelha, the physical plant of the UFFL is scattered through the city, and 80% of the occupied area is given over to teaching activities, to the deprivation of the areas needed for administrative and support services. This is one of the universities that make the most use of existing physical installations in all the federal system, and, at the same time, because of its location in and interaction with the community, it must carry a heavy load of social welfare services, especially in the health area and through the care services performed by its hospital. The present lack of space is aggravated by the poor state of about 40,000 m<sup>2</sup> of existing buildings, some of which are unredeemably dilapidated and due for demolition. In other words, the UFFL has at present less than 30% of the area it should have to function efficiently.
- 5.41 The university has scheduled a consolidation of its facilities into three areas that are near each other - Gragoatá, Valonginho, and Praia Vermelha - the last two being already partly constructed.
- 5.42 The UFFL project calls for the following: (See Annex 18, pages 3 and 4).
- i) The transfer to Praia Vermelha of the Physics and Geosciences units, which are part of the natural sciences sector.
  - ii) Completion of the plant and equipment of the technology sector which consists of the School of Engineering (at Praia Vermelha) and the School of Industrial Engineering at Volta Redonda, elsewhere in the state.
  - iii) The transfer of the Human Sciences and Philosophy, Arts, Social Communication and Letters units to permanent facilities at Gragoatá.
  - iv) The adaptation of some buildings at Valonginho to enable part of the Health Sciences sector to function properly.
- 5.43 The physical works proposed by the UFFL include new buildings and installations and the remodeling of existing buildings, for a total of 87,249 m<sup>2</sup>. The architectural designs and the construction methods and materials adopted by the UFFL to the policy and standards of the MEC. The technical staff of the university's executing unit have taken account, in their design and siting of the buildings, of the climatic and topographic conditions of the three campus areas, and have given special attention to tree-planting, for which they have specified native species.
- e) Equipment
- 5.44 The project calls for the acquisition and installation of equipment for the buildings to be built and remodeled with program funds. Particularly in need of equipment are natural science, technology and pharmacy

laboratories, the central library, and several teaching and administrative units. Also included is furnishings for the installations, and about 15,000 volumes for the institution's library system.

2. Goiás Federal University (US\$18,950,000)

a) Substantive activities

- 5.45 The UFGO offers 29 undergraduate and 12 graduate programs in four faculties (medicine, education, law, and pharmacy), two schools (engineering, and agronomy and veterinary medicine), and five institutes (human sciences and letters, mathematics and physics, chemistry and the geosciences, arts, and tropical pathology), for a total of 64 academic departments.
- 5.46 The UFGO's primary concern in regard to teaching is to raise its quality and make it more responsive to the specific needs of Goiás state and the region. Accordingly, it proposes to revise the content and methods of all its instruction in a long process of discussion that will involve not only teachers and students, but members of the community as well, users of services of the university, and employers of professional people. In some of its programs of study the UFGO has introduced a system of "curricular service periods" during which students perform some service to the community as a requirement for graduation. Part of the curricular revision will be to consider the advisability of extending this system to all the programs of study. Other contributions to the aim of relevant quality education will be the improved qualifications of the teaching staff and the adequate provision of physical requirements for teaching, including installations and equipment.
- 5.47 Given the abundance and variety of mineral deposits in the state, the UFGO proposes to start offering new courses on small-scale mining. New courses will also be offered on the farming of "cerrado" (slightly undulant savanna with a particular type of soil and stunted vegetation), the predominant landscape in the state. Total enrollment in the institution will be 9,000-10,000 in the coming years, which points to a gradual increase generated by improved proportions of graduating students and retention rates.
- 5.48 The UFGO has programmed 250 research projects, almost all of them relating to specific problems and needs of the region, and concentrated in the agricultural sciences, extraction technology, the health sciences, and education. Examples are research projects in "cerrado" farming and small-scale extraction, the results of which will be passed on in new courses. In the health sciences the UFGO has launched, with support from the CNPq, an important study on the prevention of Chagas' disease, which is very common in the region, and of other tropical diseases. In education, many studies will be done on the teaching profession in Goiás state.

- 5.49 The university will establish four campus outposts ("campi avanzados") in the hinterlands of the state to span it from north to south and serve as radiating foci for the institution's extension services. To these services must be added the proposed "curricular service periods" required obligatory of students, and new extension work to be carried on by the teaching staff, consisting in assistance to small and middle-scale farmers, support to schools and teachers, medical, dental and hospital services, publications, lectures, seminars, art exhibits, and the use of communication media - in short, more than a million hours of direct service to the community every year in the mid-eighties.
- 5.50 An additional aspect of the "Directing Plan" (Plan Director) is an increase in the institution's internal efficiency accomplished by reforms in the organization and internal procedures. Units and functions will be regrouped under the prorectories to reduce the numbers of staff members answering directly to the Rector, and the methods of work will be reformulated accordingly. Also under discussion is the organization of the academic departments and grouping them into institutes, schools and faculties, for there are too many subunits, which makes for a degree of dispersion. However, the university has not reached any final decision on the academic organization.

b) Training of teaching and administrative staff

- 5.51 The project includes 10 scholarships for doctoral studies (5 in the country and 5 abroad) and 30 for master's degrees (to be taken in Brazil). The principal areas are those relating to agroindustry and extractive technology, the natural and exact sciences, the health and human (including arts and letters) sciences. The proportion of teaching staff holding master's degrees and doctorates will rise from 24.9% to 28.4% (slightly above the average for the federal system). In addition, 18 specialization courses (graduate courses in the broad sense) will be offered for 330 teaching staff (30% of the total) in the areas of greatest need under the UFGO project.
- 5.52 About 400 members of the technical-administrative staff will be trained in 46 courses covering a wide range of university's supporting activities.

c) Technical assistance

- 5.53 The project calls for 10 technical consultancies, one in the academic area (curriculum planning), one in laboratories (preventive maintenance of equipment), three in the information processing area (library, files and publishing), one in the reorganization of units and functions, and four in the university's administrative procedures.

d) Works and structures

- 5.54 The UFGO functions essentially at two campuses in the urban area of Goiania. The older of the two (Campus I) is downtown, on a tract of

about 20 hectares in the quarter called Plaza Universitaria, and the newer (Campus II) on a tract of 213 hectares with 30,000 m2 of structures at Samambaia 12 kms away. This distance is at the source of an administratively and operationally complex situation the result of which is ineffective use of the facilities. Moreover, the teaching area is 20% less than is needed, and about 43% of the currently occupied area must be remodeled to make it into adequate space.

5.55 The principal requirements for physical premises may be summarized as follows: (See Annex 18, pages 10 and 11).

- i) The construction of 20,000 m2 of net buildings in the teaching area of the Samambaia campus;
- ii) Remodeling and improvements particularly at Campus I downtown in order to achieve rational space utilization.
- iii) The remodeling and complementation of teaching and research facilities in the health area.
- iv) A consolidation of the library system by building a central library in Samambaia; and
- v) Additions to the infrastructure on the Samambaia campus.

5.56 The works and structures at Campus II are designed for execution using traditional construction methods and materials and, in general, following the MEC's policy of functional and not embellished architecture. Special care has been taken to preserve part of the natural woodland on the grounds, which has been made into a forest reserve for botanical studies and student recreation. In the gardening and tree-planting, indigenous species will be used, thus extending that design principle to the entire campus.

e) Equipment

5.57 The project provides for the acquisition and installation of equipment and furnishings, for the buildings to be erected and remodeled. The principal equipment components are for the central library and to complement the equipment of the technology and health science laboratories. Also included are about 12,000 volumes for the central library.

3. Amazonas Federal University (FUAM) (US\$24,650,000)

a) Substantive activities

5.58 The FUAM at present offers 29 undergraduate and 10 specialization programs at three institutes (human sciences, biological sciences, and exact sciences) and four faculties (technology, health sciences, education, and social studies), with a total of 35 academic departments.

- 5.59 Evaluations of the instruction are conducted periodically at the university. In addition to the curricular adjustments that emerge from these reviews, the FUAM proposes to introduce new courses in forest engineering and fisheries with the collaboration of the INPA. The total enrollment will be 7,500 to 8,000 in the coming years, assuming that the total number of student places in the first year of instruction does not increase.
- 5.60 The FUAM proposes to conduct 24 research projects in the coming years, 12 in the agricultural sciences (including forestry and ecological studies in coordination with the INPA), five in areas of technology, six in human and social sciences (including education), and one in health sciences. Examples of these research projects are those for tropical fruit processing in northern Brazil, the medicinal properties of Amazonian plants, and the preservation of Amazonian plant and animal species.
- 5.61 In the extension field, the FUAM proposes to conduct yearly not less than 16 extension courses, and a variety of other such activities, notably community action programs in the quarters of Rio Branco, at Pouvir Novo, and at Boa Esperança, a program of assistance to rural teachers, and the medical, dental and hospital services that the Faculty of Health Sciences renders to the community.

b) Training of teaching and administrative staff

- 5.62 The project includes 22 fellowships for doctoral studies (15 in the country and seven abroad) and 30 for studies toward master's degrees (in Brazil). The principal areas chosen relate to agroindustry, education and health, the technological disciplines, and the natural and social sciences. The proportion of teaching staff holding master's degrees and doctorates will rise from 13.4% to at least 20.6%. In addition, specialization courses will be offered to 110 teaching staff in the health and social sciences.
- 5.63 For technical-administrative personnel, 10 concentrated courses will be offered in equipment operation and maintenance, library procedures, and different aspects of the university's administration.

c) Technical assistance

- 5.64 The project includes five technical consultancies: three in the academic area (one in curriculum planning and two in research), one in the equipment area, and one in the administration of the new campus.

d) Works and structures

- 5.65 The situation of this university in regard to physical plant is so bad that it ranks next to last among the federal universities on this score. Its physical facilities total 25,000 m<sup>2</sup>, with 50,000 m<sup>2</sup> less in areas for teaching and 6,000 m<sup>2</sup> less in areas for administrative purposes

than is recommended for those purposes by the Ministry of Education and Culture. About 15,000 m<sup>2</sup> are scattered about in the Manaus urban common, 41% in buildings of its own, 4% in borrowed buildings, and 55% in rented buildings, most of them in a poor state of repair. (See Annex 18, page 8).

- 5.66 The university has made plans to make the Aleixo campus (8 kms away from the center of the town) its main campus, and has already drawn up a Physical Development Plan that clearly conveys the institution's overall planning.
- 5.67 The bulk of the student body will be at this campus, where a group of buildings is to be erected as the center for teaching and research, as well as for administration and complementary activities. Under the established order of priorities, the first buildings to go up will be those for the basic disciplines - a Basic Sciences Center, a Biological Sciences Center, a Human Sciences, Arts and Letters Center, and the Faculty of Education. The buildings for professional instruction - the Technological Center, the Health Sciences Center, and the Juridical and Administrative Sciences Center - will be built later.
- 5.68 The works and structures at the Aleixo campus have been worked out in an expandable modular system with isolated low buildings connected by sheltered paths among gardens and areas of greenery. The existing native woodland is protected, and severe restrictions have been laid upon the building contractors to save as many trees as possible and preserve the natural environment.
- 5.69 The architectural design, construction system and materials chosen reflect a profound concern for the Amazonian environment and for providing a suitable climate in which the teaching, research, administration and other activities of the university can be carried out.
- 5.70 The total area of the new structures will be about 110,766 m<sup>2</sup>, of which about 85,017 m<sup>2</sup> will be for academic purposes.

e) Equipment

- 5.71 Provision is made for the acquisition and installation of equipment to be erected with resources of the program. The highest costs are associated with the equipment for the laboratories of the Faculties of the Health Sciences and Technology, and for the Central Library.
- 5.72 The project also includes furnishings for the installations and about 10,000 volumes for the FUAM's library.



4. Ceará Federal University (UFCE) (US\$39,450,000)

a) Substantive activities

- 5.73 The UFCE now offers 34 undergraduate, 27 graduate (in the broad sense of refresher and specialization) and 17 conventional graduate programs at six major centers - sciences, technology, humanities, applied social studies, agricultural sciences, and health sciences - with a total of 41 departments.
- 5.74 The UFCE has set up a series of teaching staff committees to subject the subject matter and methods of instruction to ongoing review. In 1981 those committees reviewed the curricula of the first year of undergraduate instruction and established new standards for the writing of theses and dissertations at the graduate level. In 1982 and thereafter the university will review the content and method of all its undergraduate and graduate programs of study, and proposes to introduce new courses in the areas of energy technology and marine biology. The total enrollment is projected at 15,500 to 17,000 over the coming year owing to increased proportions of graduating students, and retention rates.
- 5.75 The UFCE places heavy emphasis on research. Between 1976 and 1981, 360 research projects (256 individual and 104 departmental projects, in which 677 members of the teaching staff participated) were initiated, of which 268 had been completed and 92 were still in process in 1982. In the years to come at least 75 research projects will be started per year at the six centers. Of special importance is the CNPq's program for the research and development of alternative technologies for the semiarid tropics (with proposed IDB financing - BR-0168). The UFCE is one of the five universities included by the CNPq in the program, and during the analysis special care was taken to avoid duplications on the lists of equipment and other components. Examples of other research projects in view are those concerned with the biology of fish and fish-catching methods, on nonconventional energy sources, and the earth sciences (in connection with recent discoveries of extensive ore deposits in the Northeast).
- 5.76 The UFCE conducts ongoing extension programs in three broad areas: community action, cultural action, and extension courses. The principal community action projects in the countryside are as follows: the CRUTAC project (operating in municipalities and districts of Canindé, Itapipoca, Pentecoste and Senador Pompeu, and extending the benefits of health services to more than 100,000 beneficiaries), the Maternal and Child Project, the Aquiraz-Cascavel Project (support in teaching methodology for elementary school teachers); the Pacatuba Project (rural extension, home economics, and community health), and the action of the outpost campus at Xapuri/Acre. In the urban periphery there is the Papoco Project (for pre-school and elementary education, culture, health, and family development). In the cultural area the UFCE is conducting the Chamber Orchestra, University Chorus, and Popular Music projects; the "Memorai Popular do Ceará" project (for the preservation and promotion

of local traditions and cultural expressions), the Publications Project, and the UFCE Radio Project. In addition, the institution offers some 31 extension courses every year and numerous lectures, seminars and exhibitions.

b) Training of teaching and administrative staff

- 5.77 The project includes 40 scholarships for doctoral studies (30 in the country and 10 abroad) and 30 for studies toward master's degrees in the country. The principal areas of study selected are the engineering disciplines, and the earth, biological, social and health sciences. The proportion of teaching staff with master's degrees and doctorates will increase from about 34.6% to about 41.8%. Also to be offered are 15 specialization courses for 120 professors of medicine, dentistry, biology, chemistry and mathematics. For the technical-administrative personnel, 50 courses will be offered in the different fields of university administration and in equipment operation and maintenance.

c) Technical assistance

- 5.78 The project includes eight technical consultancies, three in the academic area (one in curriculum planning, one in research, and the third in extension), three in information processing (information systems, libraries and files), and two in the university's administrative procedures.

d) Works and structures

- 5.79 The UFCE operates on three campuses in the urban area: Pici, Porangabucu, and Benfica, plus a number of institutes scattered about Fortaleza. In addition, there is a severe shortage of area for academic activities. The works and structures proposed for the three campuses include: (See Annex 18, pages 5, 6 and 7).
- i) The Pici campus (the main campus): Completion of the installations for the Sciences and Agricultural Sciences Centers; new buildings for the Humanities and Applied Social Sciences Centers and the Higher Administration.
  - ii) The Porangabucu campus (Health): Completion of the installations the Health Sciences Center and the areas for dentistry, morphology, nursing, pharmacy, public health, and sectoral administration.
  - iii) The Benfica campus (Extension, Culture, Administration): All activities relating to university extension and culture will be concentrated in remodeled buildings. Areas remaining vacant when their present activities have been transferred to the Pici campus will be put up for sale.
- 5.80 The three campuses are separated from one another but are easily reached by public transport and private vehicle by urban routes that are quickly traversed.

- 5.81 The plan for the physical development of the main campus at Pici includes architectural designs, construction methods and materials commonly found in Fortaleza and already used in the existing buildings. The infrastructural works include a telephone system suited to the UFCE's projected needs, sewerage systems, urban structures, tree-planting, and landscaping.
- 5.82 The remodeling plan for the Benfica campus is designed to enhance the visibility of the extension and cultural activities by taking advantage of their proximity to the center of the city and to their contacts with the public.
- 5.83 The Porangabucu campus concentrates all activities in the health area, and already has substantial facilities, such as the hospital, which has made it preferable to expand the existing facilities rather than transfer the activities to the Pici campus. The areas of instruction of medicine, dentistry, pharmacy and nursing are all concentrated at Porangabucu. The Ceará Hemotherapy and Hematology Center and the Cancer Institute, though not belonging to the UFCE, are integral components of the health complex.

e) Equipment

- 5.84 The project includes the acquisition and installation of equipment for the buildings to be erected and remodeled and the furnishings for them. The principal equipment components are for laboratories in the sciences, technology, agricultural sciences and health sciences centers and for the information processing system (the data processing unit and the libraries). Also included are some 15,000 volumes for the libraries.

G. Total Cost and Financing of the Program

1. Total cost 1/

- 5.85 The total cost of the program is estimated at the equivalent of US\$200 million.

2. Financing of the program

- 5.86 The scheme for the financing of the program would be as follows: the Bank would finance up to a total of US\$95 million (47.5%), of which US\$75 million (37.5%) would be in foreign exchange, and US\$20 million (10%) in local currency. The financing in foreign exchange would be provided from the inter-regional capital resources, and that in local currency from the Fund for Special Operations. The local contribution, totaling the equivalent of US\$105.0 million, would be provided by the Federal Government. Following is a summary of the program's costs by investment categories and sources of financing in Table 5-1, and by universities in Table 5-2.

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1/ The costs for each participating university are itemized in Annex 6.

Table 5-1

Total Cost of the Program by Sources of Financing  
(US\$ thousands)

<u>Investment Categories</u>	<u>I D B</u>			<u>BRAZIL</u>	<u>Grand</u> <u>Total</u>	<u>%</u>
	<u>Foreign</u> <u>Exchange</u>	<u>Local</u> <u>Currency</u>	<u>Total</u>	<u>Local Cu-</u> <u>rrency</u>		
1. <u>Engineer. and Administ. 1/</u>	-	-	-	18,600	18,600	9.3
1.1 Arch. designs/Engineer.	-	-	-	800	800	0.4
1.2 Administ./Supervision	-	-	-	17,800	17,800	8.9
1.2.1 Central	-	-	-	6,400	6,400	3.2
1.2.2 Executing agencies	-	-	-	11,400	11,400	5.7
2. <u>Direct Costs 1/</u>	70,700	19,600	90,300	50,750	141,050	70.5
2.1 Works and Installations	62,000	17,000	79,000	25,000	104,000	52.0
2.2 Equipment	8,700	2,600	11,300	25,750	37,050	18.5
3. <u>Concurrent Costs 1/</u>	3,000	-	3,000	21,600	24,600	12.3
3.1 Personnel training	3,000	-	3,000	20,800	23,800	11.9
3.1.1 For teachers in the country	-	-	-	18,200	18,200	9.1
3.1.2 For teachers abroad	3,000	-	3,000	-	3,000	1.5
3.1.3 Technical/Administrative	-	-	-	2,600	2,600	1.3
3.2 Technical assistance	-	-	-	800	800	0.4
4. <u>Financial Charges</u>	1,050	400	1,450	14,300	15,750	7.9
4.1 Interest	500	200	700	13,000	13,700	6.8
4.2 IDB credit fee 2/	-	-	-	1,300	1,300	0.7
4.3 Inspection/Supervision	550	200	750	-	750	0.4
TOTAL	75,000	20,000	95,000	105,000	200,000	100.0
PERCENTAGES	37.5	10.0	47.5	52.5	100.0	

1/ The costs include contingencies and escalation.

2/ The IDB's Credit Fee will be paid in foreign exchange.

Table 5-2

Costs by University and Investment Category  
(US\$ thousands)

<u>Investment Categories</u>	<u>F E D E R A L U N I V E R S I T Y O F</u>									<u>Grand Total</u>
	<u>Flumi-nense</u>	<u>Geará</u>	<u>Amazo-nas</u>	<u>Mara-nhão</u>	<u>Goiás</u>	<u>Ala-goas</u>	<u>Juiz de Fora</u>	<u>Mato Grosso</u>	<u>Acre</u>	
1. <u>Eng. and Administration</u>	<u>4,200</u>	<u>3,500</u>	<u>2,200</u>	<u>2,050</u>	<u>1,600</u>	<u>1,650</u>	<u>1,350</u>	<u>1,050</u>	<u>1,000</u>	<u>18,600</u>
1.1 Designs	-	-	-	150	-	150	150	150	200	800
1.2 Admin. and Supervision	<u>4,200</u>	<u>3,500</u>	<u>2,200</u>	<u>1,900</u>	<u>1,600</u>	<u>1,500</u>	<u>1,200</u>	<u>900</u>	<u>800</u>	<u>17,800</u>
1.2.1 Central	1,500	1,300	800	700	600	500	400	300	300	6,400
1.2.2 Agencies	2,700	2,200	1,400	1,200	1,000	1,000	800	600	500	11,400
2. <u>Direct Costs</u>	<u>33,800</u>	<u>28,000</u>	<u>17,500</u>	<u>14,000</u>	<u>13,400</u>	<u>12,200</u>	<u>9,250</u>	<u>7,000</u>	<u>5,900</u>	<u>141,050</u>
2.1 Works and installations	24,800	20,200	13,800	10,300	9,800	8,600	5,700	6,400	4,400	104,000
2.2 Equipment	9,000	7,800	3,700	3,700	3,600	3,600	3,550	600	1,500	37,050
3. <u>Concurrent Costs</u>	<u>5,900</u>	<u>4,850</u>	<u>3,000</u>	<u>2,500</u>	<u>2,450</u>	<u>2,000</u>	<u>1,650</u>	<u>1,200</u>	<u>1,050</u>	<u>24,600</u>
3.1 Personnel training	<u>5,700</u>	<u>4,700</u>	<u>2,900</u>	<u>2,400</u>	<u>2,400</u>	<u>1,950</u>	<u>1,600</u>	<u>1,150</u>	<u>1,000</u>	<u>23,800</u>
3.1.1 Teacher training in the country	4,400	3,600	2,200	1,800	1,800	1,500	1,200	900	800	18,200
3.1.2 Teacher training abroad	700	600	400	300	300	250	200	150	100	3,000
3.1.3 Technical/Administ.	600	500	300	300	300	200	200	100	100	2,600
3.2 Technical Assistance	200	150	100	100	50	50	50	50	50	800
4. <u>Financial Charges</u>	<u>3,800</u>	<u>3,100</u>	<u>1,950</u>	<u>1,600</u>	<u>1,500</u>	<u>1,250</u>	<u>1,050</u>	<u>800</u>	<u>700</u>	<u>15,750</u>
4.1 Interests	3,320	2,700	1,700	1,375	1,280	1,085	905	710	620	13,700
4.2 IDB credit fee 1/	300	250	150	150	150	100	100	50	50	1,300
4.3 Inspect. and Supervision	180	150	100	75	70	65	45	40	30	750
TOTAL	<u>47,700</u>	<u>39,450</u>	<u>24,650</u>	<u>20,150</u>	<u>18,950</u>	<u>17,100</u>	<u>13,300</u>	<u>10,050</u>	<u>8,650</u>	<u>200,000</u>
Percentages	23.8	19.7	12.3	10.1	9.5	8.6	6.7	5.0	4.3	100.0

1/ The IDB's credit fee will be paid in foreign exchange.

3. Terms and conditions of the requested financing

5.87 Interest rate

IC 10.5% p.a., or the going rate when the possible loan is approved.

FSO 3% p.a.

Credit fee

IC 1.25%

FSO n/a

Amortization and grace periods

IC 20 and 4-1/2 years

FSO 25 and 4-1/2 years

Terms for material start of works and for disbursement

Two years for material start of works and four years for making disbursements.

Fee for inspection and supervision

1% of the amount of the possible IDB loan.

4. Calculation of costs 1/

(1) Engineering and administration (US\$18,600,000)

5.88 This investment category breaks down into two subcategories: a) designs, and b) administration and supervision, and is financed in its entirety from the local counterpart contribution.

a) Designs (US\$800,000)

5.89 The designs for which the costs are included are those needed to complete the engineering plans of the five universities not in the representative sample. 2/ The cost was estimated at 3% of the cost of the works envisaged at them. This cost accounts for 0.4% of the total cost of the program.

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1/ The investment categories of engineering and administration, direct costs, and concurrent costs already include contingencies and cost escalation. See Annex 7 for details.

2/ The design costs of the four universities in the sample were assumed by the MEC, having been incurred before December 28, 1981, and hence cannot be credited as local counterpart expenditures.

b) Administration and supervision (US\$17,800,000)

5.90 The administration and supervision of the program has two parts: a central administration, and the administration at each university.

i) Central administration and supervision (US\$6,400,000)

5.91 CEDATE will have charge of the central administration of the program, including control and supervision of the works, purchases of equipment, the personnel training through CAPES, and the technical assistance to the universities. The cost of this central administration has been calculated on the basis of a detailed budget of the technical and administrative personnel regarded as necessary, and of an estimate of the costs of materials, equipment, communications and travel required for execution of the program. The cost of this central administration accounts for 3.2% of the total program cost.

ii) Executing units of the universities (US\$11,400,000)

5.92 At each participating university an executing unit will be set up to take charge of the entire execution of the project at that university. The cost of these executing units accounts for 5.7% of the total cost of the program, and has been calculated similarly to the central administration, on the basis of the makeup of each unit in accordance with the complexity of the project at the given university.

(2) Direct costs (US\$141,050,000)

5.93 This category has the following two parts: a) works and installations, and b) provisioning.

i) Works and installations (US\$104,000,000)

5.94 The cost estimate was based on a review of 100% of the draft projects and 70% of the final plans. The costs were established taking account of the MEC/CEDATE estimates for the universities, and also of the estimates obtained during the analysis of the four universities of the representative sample.

5.95 In estimating the unit costs of the enclosed areas the MEC took as a basis the costs bulletin (of the SBC <sup>1/</sup>), which publishes monthly costs per m<sup>2</sup> and per structure in each city. These basic costs were subjected to appropriate adjustments. <sup>2/</sup>

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<sup>1/</sup> The Sistema Brasileiro de Custos (Brazilian Cost System). A computerized system accessible by telephone (EMBRATEL).

<sup>2/</sup> The average construction unit cost has been estimated at about US\$350/m<sup>2</sup>.

- 5.96 The project executing units at the different universities adjusted these costs to the variables for their own types of architecture, prices of materials obtained locally and brought in from other regions, and to this base cost added an assigned value for the profits and indirect expenses of the construction firms (BDI), which amounts to about 30%. 1/
- 5.97 During the analysis the cost components, their justification and the incidence of the particularities of the individual universities were discussed extensively in the country with both the MEC/CEDATE for all nine universities and with the project execution units at the four universities of the sample. All the PEUs use similar cost bases, but each adjusts them by indexes reflecting the local experience.
- 5.98 The works and structures to be executed under the program include new structures, remodelings and outdoor works (streets, parking areas, pedestrian walks, fences and sidewalks, tree planting, landscaping, and sewerage, electric power and telephone systems).
- 5.99 Details on the costs of works and structures at each university are supplied in Annex 6. It may be mentioned that the works and structures shown in that annex are only part of the needs of the several universities and, that, therefore, in the course of execution of the program it might come to be perceived as necessary or advisable to make substitutions.

ii) Equipment (US\$37,050,000)

- 5.100 This investment category accounts for 18.5% of the total cost of the program and covers the cost of the equipment, machinery, tools, apparatus, literature and furniture to be acquired for the participating universities.
- 5.101 The costs of the equipment lists were initially calculated by the technical units of the interested universities on the basis of catalogs and their own knowledge of the equipment and their market prices. These lists were revised by the "technical bureaus" (escritórios técnicos) of the universities and by the technical staff of CEDATE. Later CEDATE concluded contracts with two kinds of consultants to ensure a more complete justification of the need for that equipment and a detailed review of its cost. On the one hand, it hired individual consultants (about 100 consultant-days of work) to provide highly specialized certifications, and on the other hand, it entered into an agreement with the Brazilian Association of the Machinery and Equipment Industry (ABIMAQ),

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1/ Other local cost data were obtained through a) the PINI system (Revista A Construção) and its TCPO (Tabela de Composição de Preços para Orçamentos), which supplies costs by regions, and b) Dados del Dirigente Constructor, for costs per unit of service.



for a review of the lists by the technical staff of that association as well. With all the information before it that had been amassed in all those reviews, CEDATE drew up the lists that have been presented to the Bank with their respective specifications and costs.

- 5.102 The costs of furnishings and literature have been calculated by the "technical bureaus" of the universities and reviewed by CEDATE on the basis of recent experience and current market prices.
- (3) Concurrent costs (US\$24,600,000)
- 5.103 This category is in two parts: a) personnel training, and b) technical assistance.
- i) Personnel training (US\$23,800,000)
- 5.104 This head represents 11.9% of the total program cost and covers the costs of teacher training in Brazil and abroad, plus those of training technical-administrative personnel in the country.
- 5.105 The calculation of the costs of teacher training in master's and doctoral programs includes the salaries of the teaching staff which continue to be paid during the period of study, travel costs, insurance, benefits and allowances in accordance with the family size and place where the studies are pursued, in addition to the direct costs of the graduate studies themselves. These calculations, and those relating to specialization courses in the university itself for technical-administrative personnel, have been done on the basis of the recent and current experience of CAPES.
- 5.106 The provision for graduate studies abroad includes a foreign exchange component calculated at between US\$16,000 and US\$20,000 per scholarship holder per year, and averaging US\$18,180. The period of study ranges between two and four years.
- ii) Technical assistance (US\$800,000)
- 5.107 This cost represents 0.4% of the total cost of the program and includes the fees and per diem of the consultants as set by the "Department of Administration and Public Service" (DASP) of the Federal Government, plus travel costs based on the going rates of Brazilian air lines for average flying distances in Brazil.
- (4) Unallocated expenses (US\$47,950,000)
- 5.108 The costs in this category are included in investment categories 1, 2 and 3.

i) Contingencies (US\$19,950,000)

5.109 This figure was calculated in accordance with the current instructions, with the contingency regarded as adequate being applied to each investment subcategory. The general average yields a contingency of 10%, which was applied to the total obtained exclusive of escalation and financial charges.

ii) Cost escalation (US\$28,000,000)

5.110 The cost escalation was calculated using an escalation factor determined on the basis of the projected exchange rate and the rate of domestic inflation. A detailed account of the calculation of this factor is set forth in Annex 8. It is worth mentioning, however, that the escalation factor was calculated as the average quotient of the price index for civil construction to the official exchange rate of the last 20 months (taking August 1982 as the base).

5.111 The table of costs presented in Annex 7 details the cost escalation for each investment category. The total cost for escalation accounts for 14% of the total cost of the program.

(5) Financial charges (US\$15,750,000)

5.112 The financial charges (7.9%) have been calculated on the basis of the conditions described in subsection 3, Section G of this chapter, above.

## VI. THE BORROWER AND THE EXECUTING AGENCY

This chapter discusses the borrower and presents a detailed analysis of the executing agency and agents

### A. The Borrower

- 6.01 The borrower would be the Federative Republic of Brazil.

### B. Coordinating and Executing Agency

#### a) Ministry of Education and Culture (MEC)

- 6.02 This Ministry would have the responsibility for execution of the program through the agencies mentioned below, which are part of the Ministry.

#### b) Center for Development and Technical Support to Education (CEDATE)

- 6.03 This center would be in charge of general coordination of program execution.

#### c) Coordination of Skills Improvement at the Higher Education Level (CAPES)

- 6.04 This institution would be responsible for carrying out the manpower training part of the program. Its relations with CEDATE would be formalized under an agreement reflecting the terms and conditions of the IDB loan contract.

#### d) Participating universities

- 6.05 The universities would have direct responsibility for their own projects under the technical and administrative supervision of CEDATE or CAPES on that part of the program referring to human resource training. Their relations with CEDATE would be formalized under agreements similar to those mentioned in the preceding paragraph.

### C. Ministry of Education and Culture (MEC)

- 6.06 MEC is in charge of carrying out the educational policy of the federal government at all levels (see organization chart Annex 9). With reference to higher education, MEC supervises all universities and other institutions in the federal system, channels national budget resources earmarked for the system, promotes and monitors special activities to improve the quality of university activities, expands capacity in the system and provides guidelines on the development of new educational programs in line with development planning.

D. Center for Development and Technical Support to Education (CEDATE)

a) Legal basis and background

- 6.07 CEDATE is an agency with administrative and financial autonomy that was formed under Ministerial Decree 566 of October 8, 1981. It is directly under the General Secretariat of the Ministry of Education and Culture. CEDATE is the result of the merger of the Brazilian School Facilities and Equipment Center (CEBRACE), formed in 1973, the Coordinator for Development of Higher Education Facilities (PREMESU), formed in 1978, and the Program for the Expansion and Advancement of Education (PREMEN), organized in 1972. Therefore, CEDATE inherited the broad experience accumulated by the aforementioned institutions, including the execution of projects with financing from budgets of their own and from national and international institutions.

b) Purpose

- 6.08 The purpose of CEDATE is to promote, coordinate and supervise activities to generate knowledge applicable to the management and development of physical infrastructure and support for education, culture and sports, specifically:

- to support the planning of educational systems and networks, facilities and equipment;
- to standardize technical specifications for buildings, facilities and equipment, as well as their utilization and maintenance;
- to encourage the development of national technology and materials for construction, equipment and maintenance;
- to manage physical infrastructure programs and projects;
- to promote exchanges of experience, know-how and innovations in teaching, architecture, building, administration and operations.

- 6.09 In performing its activities, CEDATE works in conjunction with the top-level agencies of the Ministry and through them is active in providing assistance and technical cooperation to programs and projects of public and private teaching and research entities and in the development and preservation of culture and sports.

c) Organization

- 6.10 CEDATE is organized as follows: (See organization chart, Annex 10)

- General Directorate
  - Directorate for Development of Operations
    - Data Processing Unit
    - Budget, Finance and Accounting Departments
    - Follow-up, Control and Evaluation Department
    - Operational Support Department
  - Directorate for Technical Development
    - Documentation and Information Unit
    - Studies and Planning Department
    - Building Techniques Development Department
    - Equipment Development Department

6.11 The General Directorate is the highest authority in CEDATE and is advised by an Advisory Committee composed of the Director General, as chairman, and the heads of the secretariats in the Ministry of Education and Culture.

6.12 The Directorate for Development of Operations advises the Director General on the formulation of policies and guidelines, and provides support for the implementation of CEDATE's plans, programs and projects, those of the Ministry secretariats, or agencies supervised by the latter. Consequently, it is responsible for supervising, coordinating, monitoring and evaluating the use of funds allocated thereto, administering budgetary and financial execution of the agency and for the operation of the materials, personnel, property and general service systems.

6.13 The Directorate for Technical Development advises the Director General on the formulation of policies and guidelines for the conduct of research programs needed to generate know-how on the educational, cultural and sports infrastructure in Brazil, as well as technical matters that contribute to better use of available resources. It also advises the Director General on planning, supervising and coordinating technical activities conducted by CEDATE.

d) Staff

6.14 The staff of CEDATE, most of which comes from the agencies that organized it, is well qualified and highly experienced in the work of the institution. A staffing summary, given below (see departmental staffing in Annex 11) shows a staff of 116, 8% of which are in the General Directorate and the Advisory Committee, 44% in the Directorate for Development of Operations, and 48% in the Directorate for Technical Development. Sixty one percent of the staff is professional, with a higher percentage in the Directorate for Technical Development than in the Directorate for Development of Operations. This is normal bearing in mind the functions of the two offices. Furthermore, the distribution, numbers and qualifications of the current staff are adequate for the work it performs; nevertheless, staff will be added to man the Central Executing Unit, which would be engaged exclusively in program work.

Table 6-1

CEDATE  
Staffing Summary

	<u>Professional</u>		<u>Support</u>		<u>Total</u>	
	<u>No.</u>	<u>%</u>	<u>No.</u>	<u>%</u>	<u>No.</u>	<u>%</u>
General Directorate	1	1	3	7	4	4
Advisory Committee	5	7			5	4
Directorate Development						
Operations	24	34	27	60	51	44
Directorate Technical						
Development	41	58	15	33	56	48
TOTAL	71	100	45	100	116	100
	==	==	==	==	==	==
%	61		39		100	

e) Systems and procedures

- 6.15 CEDATE has drafted a number of manuals for the projects it coordinates, which include technical and procedural instructions governing its own activities as well as the universities or beneficiary entities. These instructions and procedures cover all phases of project execution (preparation, presentation, follow-up and administrative and financial controls).
- 6.16 CEDATE is also in the process of implementing automated data systems to help in decision-making. The automated systems already implemented and in process of improvement are as follows:
- Follow-up and control of financial and budgetary execution
  - Global plan of physical development.
- 6.17 The automated systems already designed which are expected to be implemented shortly are as follows:
- Follow-up and control of orders for execution.
  - Follow-up and control of funds administered by CEDATE.
  - Follow-up of equipment imports.

f) Accounting system

- 6.18 The accounting records on budget, financial and equity transactions are kept by the Secretariat for Internal Control (CISSET) of the Ministry of Education and Culture, the purposes of which are as follows:

- as the sectoral agency of the Central Secretariat for Internal Control of the Planning Secretariat of the Office of the Presidency of the Republic, to control the financial management and accounting system activities;
- to act as a support agency for the Minister of State: a) for physical and financial follow-up of projects and activities in charge of Ministry units, including those conducted by indirectly administered or decentralized agencies, b) to provide the Minister of State with accounting balance sheets, budgetary, financial and equity statements and program follow-up reports;
- to conduct studies for the formulation of guidelines and discharge duties involving orientation, coordination and financial control.

6.19 Administratively, CISET works under the jurisdiction of the Minister. Technically, it is under the Central Secretariat for Internal Control, Planning Secretariat of the Office of the President of the Republic.

6.20 In addition, CEDATE keeps records, does follow-up and control of budgetary, financial and equity operations having to do with funds allocated in its budget, through its Operational Support Department and Budget, Finance and Accounting Department of the Directorate for Development of Operations. In addition to the aforementioned activities, CEDATE has a specific procedure on its own administered projects. Based on a physical programming, financial and follow-up manual, it keeps the necessary records on the programming and application of funds originating from contracts signed with foreign and domestic financial agents.

g) Audit

6.21 Audit of the entire public sector is performed by the Central Secretariat for Internal Control of the Planning Secretariat of the Office of the President of the Republic.

h) Conclusion

6.22 CEDATE has a qualified staff and adequate administrative-financial and control organization and systems.

E. Coordination of Skills Improvement at the Higher Education Level (CAPES)

a) Legal basis

6.23 CAPES is an agency with limited autonomy formed under Decree 50737 of July 1961, as amended by Decrees 53932 of 1964, 66662 of 1970, and 742299 of 1974. It is a part of the Secretariat for Higher Education of the Ministry of Education and Culture.

b) Purpose

6.24 The principal objectives of CAPES are as follows:

- Support for the Secretariat of Higher Education in the formulation of policies on postgraduate study, scientific and technological research and manpower training.
- To draft the National Postgraduate Study Plan and to follow-up and coordinate its execution.
- To encourage activities that contribute directly or indirectly to the development and consolidation of higher education, including financial aid and technical assistance.
- To promote higher education staff training activities.
- To award fellowships for skills improvement.

c) Organization

6.25 CAPES is organized as follows: (see organization chart Annex 12)

- Deliberating Council
- General Directorate
  - Program Directorate
  - Coordination of Foreign Fellowships
  - Coordination of Domestic Fellowships
  - Coordination of Studies and Promotion
  - Coordination of Training
  - Coordination of Follow-up and Evaluation
  - Coordination of International Cooperation
  - Coordination of Data Processing and Communications
- Directorate for Administration
  - Personnel Division
  - Finance and Budget Division
  - Auxiliary Activities Division

6.26 The members of the Deliberating Council are the Secretary of Higher Education of the Ministry of Education and Culture, chairman; the director general of CAPES; the head of the Culture, Science and Technology Cooperation Department of the Ministry of Foreign Affairs; the chairman of the National Science and Technology Development Council; the superintendent of the Research Institute of the Economic and Social Planning Institute, and 5 reputable experts.

6.27 The Directorate of Programs performs the following activities at the present time:

- Domestic scholarship program for teachers who are recent graduates and other professionals qualified to take postgraduate courses.



- Foreign fellowship program to handle the need for development of human resources abroad.
- Training program involving the expansion and diversification of manpower training systems.
- Program to promote postgraduate studies, to strengthen the science infrastructure at universities based on upgrading academic postgraduate teaching.
- Program to support the development of higher education, the purpose of which is to provide higher education institutions with the necessary assistance to initiate and/or consolidate educational innovations and improve the quality of teaching and learning.
- Postgraduate follow-up and evaluation program for an in-depth knowledge of the postgraduate system in Brazil, generating data for its evaluation and history.
- Data processing and communications program, which strives to provide support for CAPES' other programs.

6.28 The Directorate for Administration is responsible for the following principal duties:

- To carry out supervision, direction, performance and control of matters related to personnel management.
- To draft the CAPES budget, monitor contracts and agreements, and carry out all activities related to financial and budgetary operations.
- To plan, direct, supervise and carry out general services and materials management activities.

d) Personnel

6.29 CAPES has a well-qualified, highly experienced staff in the business of the institution. A staffing summary is given below (see department staffing in Annex 13), which shows a total of 204 staff members, 8% of which are in the General Directorate and on the Advisory Staff; 53% in the Program Directorate and 39% in the Administrative Directorate. Forty-nine percent of the staff are university graduates, a rather high percentage of which is in the Program Directorate, which is consistent with its duties.

Table 6-2

CAPES

Staffing Summary

	<u>Professional</u>		<u>Middle and Lower Level</u>		<u>Total</u>	
	<u>No.</u>	<u>%</u>	<u>No.</u>	<u>%</u>	<u>No.</u>	<u>%</u>
General Directorate and Advisory Staff	11	11	5	5	16	8
Program Directorate	70	70	39	37	109	53
Administrative Directorate	19	19	60	58	79	39
Total	100	100	104	100	204	100
%	49		51		100	

e) Systems and procedures

- 6.30 For the execution of its programs, CAPES has technical and procedural instructions, some of them mechanized, which properly govern CAPES' own activities as well as those at the university level. These instructions and procedures cover all phases of program execution (preparation, presentation, follow-up and administrative and financial control).

f) Accounting system

- 6.31 As a public agency, CAPES, the same as CEDATE, is an autonomous agency under the Ministry of Education and Culture and has an accounting system identical to CEDATE's (see CEDATE accounting system, paragraph 6.18).

g) Audit

- 6.32 Just as CEDATE, CAPES is audited by the Central Secretariat for Internal Control of the Planning Secretariat of the Office of the President of the Republic.

h) Conclusion

- 6.33 CAPES has a qualified staff and an adequate organization and administrative, financial and control systems.

F. Participating Universities

- 6.34 The sample universities and all those that would participate in the project are federal institutions under the Secretariat for Higher Education of MEC.

- 6.35 The University Council is the highest authority in each university. The administrative and financial organization varies from one university to another depending on the characteristics of each one and their size. However, because they are federal agencies, they are responsible for complying with the rules and guidelines emanating from central and sectoral agencies a) of the civil service system, b) of the financial management, accounting and audit system, and c) of the general services system, all part of the federal administration.

G. Financial Considerations 1/

a) Ministry of Education and Culture (MEC)

- 6.36 The MEC budget for the past three years and the share therein of institutions of higher learning is given below.

Table 6-3

MEC. Budgetary Execution  
(US\$ millions)

	1979		1980		1981	
	US\$	%	US\$	%	US\$	%
Total MEC	1,767		2,093		3,161	
	=====		=====		=====	
Inst. of higher learning						
Current spending	896	85	1,121	88	1,889	81
Capital spending	161	15	147	12	443	19
	<u>1,057</u>	<u>100</u>	<u>1,268</u>	<u>100</u>	<u>2,332</u>	<u>100</u>
	=====	===	=====	===	=====	===
% share institutions of higher learning in MEC total		60		61		74
		==		==		==

- 6.37 The share of higher education in the MEC budget was high because official financing of primary and secondary education is handled by state and municipal governments. The percentage was nearly two thirds of the 1979 and 1980 MEC budgets. In 1981, it was almost three fourths, at US\$2.332 billion. Of this amount, 81% was used for current expenditures and 19% for capital spending.

1/ For the conversion to dollars the original figures in August 1982 cruzeiros were taken and converted at the current rate (Cr.\$180 per US\$ dollar) using the coefficient of the national treasury's readjustable obligations.

- 6.38 The local contribution to the program would average US\$31.2 million per annum. In comparison with the 1981 budget, this would represent only 1% of MEC's total budget and 7% of the funds allocated for capital expenditures of institutions of higher learning. Therefore, it is expected that the local contribution, with its slight impact on the budget, would be met on a timely basis.

b) Center for Development and Technical Support to Education (CEDATE)

- 6.39 CEDATE is of very recent creation. However, it acquired the broad experience and much of its personnel from its predecessor institutions. These agencies carried out many building and equipment programs for the various levels of education, using both domestic and international financing.

- 6.40 By way of example of their scope, some of the programs performed with foreign financing by the agencies that were merged into CEDATE are given below, together with the cost and the source of financing:

- Equipment for higher education institutions. This program is a result of agreements with the German Democratic Republic and the Hungarian People's Republic. Four agreements have been carried out satisfactorily and three others are in process of execution. As of December 1980, approximately US\$70 million had been disbursed.
- Expansion and improvement of higher education. This program met its objectives and goals fully and had IDB financing from loans 305/OC and 459/SF. Its total cost was US\$180 million and it was completed this year.
- Improvement of secondary education. This program was begun in 1969 at a cost of US\$64 million with USAID financing.
- Improvement of primary education. This program was begun in 1971 at a cost of US\$100 million with USAID financing.
- Development of middle, technical and vocational education. This program was begun in 1974 at a cost of US\$33 million with IDB financing under loan 379/SF.
- Improvement of primary education. This program was begun in 1974 at a cost of US\$59 million with IBRD financing.

- 6.41 As noted, because of its predecessor institutions and their staffs, CEDATE has the experience both in type and scope of program to carry out the proposed program efficiently.

c) Coordination of Skills Improvement at the Higher Education Level (CAPES)

- 6.42 CAPES expenditures include: 1) training, which is the purpose of the institution and includes domestic and foreign fellowships and institutional support, principally for training courses and 2) administrative expenditures, including current and capital spending.
- 6.43 CAPES expenditures from the national budget funds for the past three years are given below.

Table 6-4

CAPES. Budgetary Execution

(US\$ millions)

	1979		1980		1981	
	US\$	%	US\$	%	US\$	%
Training						
Domestic fellowships	9.0	29	18.8	60	19.3	40
Fellowships abroad	17.1	56	5.5	18	25.2	52
Institutional support	28.6	93	29.5	95	46.9	97
Administrative spending	2.0	7	1.6	5	1.4	3
	30.6	100	31.1	100	48.3	100
	====	===	====	===	====	===

- 6.44 CAPES expenditures increased considerably last year (a little over 50%) to US\$48.3 million, as compared to each of the preceding years. Of this amount, 97% was used for training (the purpose of the institution) and 3% for administration.
- 6.45 The program under consideration calls for an average yearly investment in training of US\$6 million, or 13% of the funds invested for that purpose by CAPES during the past year. Therefore, from the financial point of view, CAPES is not expected to have any problems in carrying out this part of the program.

d) The participating universities

- 6.46 The expenditures of the sample universities during the past three years are given below, compared to the annual yearly investment that would be made under the program and the yearly cost of maintenance for program buildings and equipment.

Table 6-5

Sample Universities

Expenditures Last Three Years vs. Program Investment and Maintenance

(US\$ million)

	<u>Actual Expenditures</u>			<u>Program</u>	
	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>Yearly average investment</u>	<u>Yearly maintenance</u>
Fluminense					
Current spending	40.4	45.2	55.6	1.9	0.4
Capital spending	4.2	2.9	3.7	9.1	-
	<u>44.6</u>	<u>48.1</u>	<u>59.3</u>	<u>11.0</u>	<u>0.4</u>
	=====	=====	=====	=====	=====
Ceará					
Current spending	27.5	30.1	38.2	1.5	0.3
Capital spending	3.2	1.6	1.2	7.6	-
	<u>30.7</u>	<u>31.7</u>	<u>39.4</u>	<u>9.1</u>	<u>0.3</u>
	=====	=====	=====	=====	=====
Amazonas					
Current spending	15.7	23.1	30.0	0.9	0.2
Capital spending	5.0	3.9	3.3	4.7	-
	<u>20.7</u>	<u>27.0</u>	<u>33.3</u>	<u>5.6</u>	<u>0.2</u>
	=====	=====	=====	=====	=====
Goiás					
Current spending	23.8	27.6	34.3	0.8	0.1
Capital spending	1.3	1.7	2.2	3.6	-
	<u>25.1</u>	<u>29.3</u>	<u>36.5</u>	<u>4.4</u>	<u>0.1</u>
	=====	=====	=====	=====	=====

- 6.47 The yearly average investment does not include financial costs. Current expenses include domestic and foreign fellowships, training courses and the hiring of consultants. Because of the program, these expenditures would be discontinued after the period of execution. Capital spending includes equipment, buildings and facilities. Both capital and current spending include the category of engineering and administration and the category of unallocated funds.
- 6.48 The total yearly average investment represents 23% of 1981 spending in the highest instance and 12% in the lowest, which it is believed the universities can administer efficiently. Yearly spending on building and equipment maintenance would represent a very small portion (less than 1%) of the current outlays made by the universities in 1981.

## VII. EXECUTION OF THE PROGRAM

This chapter gives details on how the program will be executed, what the execution mechanisms will be, the maintenance that will be done on the works and equipment and how the impact of the program will be evaluated both during execution and afterward.

### A. Execution of the Program

- 7.01 The Ministry of Education and Culture (MEC) has decided that the program would be executed through CEDATE, as mentioned in the previous chapter. As a result, CEDATE will have the responsibility for administration and general supervision of the program, and will act as coordination organ with all the other executing agents of the program (CAPES) and the executing units of the participating universities and as liason with other ministry offices.

### B. Central Coordination Unit

- 7.02 Although this unit is in fact operational at this time, it would be formally established before the first disbursement and would report directly to the Office of the Director General of CEDATE. The unit would be subdivided into seven areas, with 35 high level and eight middle level employees, as shown in the table below: (see type of personnel by area in Annex 14):

Table 7-1

#### Central Coordination Unit Personnel

	<u>High</u>	<u>Middle</u>	<u>Total</u>
Coordination	2	2	4
Follow-up and control	4	1	5
Documents system	2	1	3
Projects and works	11	1	12
Equipment	5	1	6
Budget, Finance and accounting	6	1	7
Administration and imports	5	1	6
Total:	<u>35</u>	<u>8</u>	<u>43</u>
	===	==	==

- 7.03 The functions of the Central Coordination Unit would be the following:

- Process all information and undertake all activities necessary for coordination with the IDB.

- Perform follow-up and control of all activities required by the program so that all the corrections and revisions necessary at all levels can be made.
- Ensure that the technical procedural standards defined by the executing universities are complied with so as to guarantee work quality and to facilitate follow-up and control.
- Provide technical support at all levels to the universities in an attempt to optimize and facilitate project implementation.
- Review and update all control and follow-up instruments of the project whenever necessary.
- Process the accounting and financial records, analyze expense voucher documents and request release of resources in accordance with the timetables defined for the project.
- Exchange information with the IDB and other agencies of the Brazilian government whenever it is necessary for adequate development of the project.

7.04 For adequate performance of its functions, this unit will have the support of all the other units that are parts of CEDATE, coordinated by its Office of Director General. When other MEC offices have to participate, the normal coordination mechanisms established by the ministry, including the CEDATE Advisory Council, will be used.

C. Personnel Training Unit

7.05 The personnel training part of the program will be executed by CAPES, through its Office of Program Director. This part would use the following units: (a) foreign fellowships coordination; (b) national fellowships coordination; and (c) training coordination, with the support of the Office of the Director of Administration for this work.

D. Basic Executing Unit

7.06 The executing units have already been working at the different universities in preparing the project; but these would be formally established before the first disbursement for each university. These units would report directly to the Rector of the university and would receive technical supervision from CEDATE on a general basis and from CAPES in the part on personnel training.

7.07 The Basic Executing Unit would have 18 employees of whom 12 would work at the high level and six at the medium level. The number of staff members and their distribution would vary from university to university, depending on the project's needs. The following table gives a summary classification of the staff (see type of personnel by area in Annex 15).



Table 7-2

Basic Executing Unit Personnel

	<u>High</u>	<u>Middle</u>	<u>Total</u>
Project administration	2	1	3
Management of works	4	2	6
Management of equipment	2	1	3
Management of technical assistance and personnel training	2	1	3
Management of bids, purchasing and administration	<u>2</u>	<u>1</u>	<u>3</u>
Total:	<u>12</u> ==	<u>6</u> ==	<u>18</u> ==

7.08 The functions of the Basic Executing Unit would be as follows:

1. Project administration

- Be responsible for general coordination of projects and works and take responsibility for progress on actions with the IBD, CEDATE and CAPES.
- Prepare all documents necessary for follow-up and control of the project.
- Assign all material and human resources for best development of the project.

2. Management of works

- Update and review architecture and engineering projects for all planned works.
- Follow up and control all activities necessary for execution of the works, including purchases, specifications, updating and review of projects and construction works, at all stages.
- Authorize payments included in contracts and receive finished works in accordance with instructions from CEDATE.

3. Management of equipment

- Update and review equipment projects.
- Coordinate the purchase and installation of equipment in the buildings during and after construction, guaranteeing implementation of the activities for which they were purchased.

- Coordinate the purchase and installation of adequate furnishings for each building.
- Transfer resources to the libraries for acquisition of books and periodicals.

4. Management of the technical assistance and personnel training

- Take care of hiring professionals for the training courses planned during the consulting services.
- Exercise coordination over all activities so as to coordinate the timing of the works and equipment projects.
- Coordinate, along with the corresponding office within the university, the timetables for specialization courses and master's and doctoral degree fellowships so as to guarantee the resources needed by the appropriate date.
- Review and update technical assistance projects and guarantee their effective implementation.

5. Management of bids. Purchases and administration

- Prepare the documents necessary for bids in accordance with technical instructions from the IDB and CEDATE.
- Process all necessary documents for presentation of accounts to CEDATE.
- Guarantee the development of the entire process of purchases, bid documents, competitive biddings, awards and receipt of materials or services, in accordance with law and following the technical instructions of the IDB and CEDATE.

E. Execution Period and Disbursements Timetable

1. Execution period and initial start of works

7.09 The execution period of the program has been set at four years; the material start of all works will take two years.

2. Investment timetable 1/

7.10 Based on the prepared execution program, the investments for the program are shown below in Table 7-3 by source of financing, and in Table 7-4, by investment category.

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1/ Annex 16 gives details of the investment timetable for each university.

Table 7-3

Investment Timetable

Source of Financing

<u>Source of Financing</u>	<u>Y e a r s</u>				<u>TOTAL</u>	<u>%</u>
	<u>I</u>	<u>II</u>	<u>III</u>	<u>IV</u>		
<u>IDB - IC</u>	6,100	26,250	13,000	9,650	55,000	27.5
<u>- FSO</u>	<u>4,000</u>	<u>7,300</u>	<u>5,000</u>	<u>3,700</u>	<u>20,000</u>	<u>10.0</u>
Total IDB	10,100	33,550	18,000	13,350	75,000	37.5
Local contribution	<u>29,450</u>	<u>39,500</u>	<u>30,000</u>	<u>26,050</u>	<u>125,000</u>	<u>62.5</u>
Total	<u>39,550</u>	<u>73,050</u>	<u>48,000</u>	<u>39,400</u>	<u>200,000</u>	<u>100.0</u>
	=====	=====	=====	=====	=====	=====
Percentage	19.8	36.5	24.0	19.7	100.0	

Table 7-4

Investment Timetable  
(in US\$000)

Investment Category	YEAR ONE		YEAR TWO		YEAR THREE		YEAR FOUR		GRAND TOTAL
	IDB	LOCAL	IDB	LOCAL	IDB	LOCAL	IDB	LOCAL	
1. Engineering and administration	-	6,300	-	4,100	-	4,100	-	4,100	18,600
1.1 Designs	-	800	-	-	-	-	-	-	800
1.2 Administration and supervision	-	5,500	-	4,100	-	4,100	-	4,100	17,800
1.2.1 Central	-	1,600	-	1,600	-	1,600	-	1,600	6,400
1.2.2 Agents	-	3,900	-	2,500	-	2,500	-	2,500	11,400
2. Direct Costs	9,450	17,000	32,200	27,100	16,600	15,000	12,300	11,400	141,050
2.1 Physical Works	7,600	11,400	28,900	18,500	15,400	7,300	10,100	4,800	104,000
2.2 Equipment	1,850	5,600	3,300	8,600	1,200	7,700	2,200	6,600	37,050
3. Associated Costs	500	5,000	1,000	5,700	1,000	6,100	500	4,800	24,600
3.1 Personnel Training	500	4,800	1,000	5,400	1,000	5,900	500	4,700	23,800
3.1.1 Fellowship students in country	-	4,200	-	4,500	-	5,300	-	4,200	18,200
3.1.2 Fellowship students abroad	500	-	1,000	-	1,000	-	500	-	3,000
3.1.3 Technical/Administration	-	600	-	900	-	600	-	500	2,600
3.2 Technical Assistance	-	200	-	300	-	200	-	100	800
4. Financial Expenses	250	1,050	250	2,600	400	4,800	450	5,850	15,750
4.1 Interests	50	450	150	2,250	200	4,500	300	5,800	13,750
4.2 Credit Commission	-	600	-	350	-	300	-	50	1,300
4.3 Inspection and Supervision	200	-	200	-	200	-	150	-	750
T O T A L	10,100	29,450	33,550	39,500	18,000	30,000	13,350	26,050	200,000
PERCENTAGE	5.1	14.7	16.8	19.7	9.0	15.0	6.7	13.0	100.0

F. Execution Procedures

1. Bids

- 7.11 The International competitive bidding procedures shall be followed for the purchase of equipment, materials, and furnishings, as well as all other goods associated with program. It will also be used to award works contracts and installations. This system will apply when purchases and awards exceed the equivalent of US\$100,000 and draw on foreign exchange resources of Bank financing. When these purchases and awards are paid directly of our local counterpart resources or Bank financing in local currency, the competitive biddings will be confined to Brazil. However, all the competitive biddings will follow the Bid Procedures agreed between the Bank and the Government of Brazil. These procedures will be part of the present program and will be attached as an annex to the loan contract.
- 7.12 Despite the foregoing, purchases of specialized laboratory equipment, which cannot be purchased through the competitive bidding procedure owing to the special characteristics of the equipment, could be affected, with Bank authorization, by other procedures substantially similar to those established in the loan contract's rules. These procedures shall be presented to the IDB in the case of purchases exceeding an amount in the equivalent of US\$25,000, along with the technical reasons justifying them. It should be noted that only a few cases of this type are foreseen for this program.
- a. Works and installations 1/
- 7.13 Plans indicate that during execution of the program, bids for works and installations will exceed a total estimated amount in the equivalent of US\$104.0 million. The details of their figure by participating university and year are given in Table 7-5.
- b. Equipment, materials and furnishings 1/
- 7.14 The detailed lists of equipment, bibliographical materials and furnishings were reviewed by the Bank and are in the files of PSD/PRA. Competitive biddings for the acquisition of equipment, furnishings and bibliographical materials during the execution of the program are expected to reach an estimated total in the equivalent of US\$37,050,000. Details of this amount are given by year and university in Table 7-5 below. Although the equipment lists have been reviewed by consultants that CEDATE hired and by its own staff, plans indicate that in the event of risks of obsolescence, doubts about the suitability of the equipment, or additional equipment not included in the lists, CEDATE would hire consultants for specialized opinions.

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1/ Annex 17 gives details of the Bid Calendar by university and item, and Annex 5 gives examples of the lists of equipment for each of the universities of the sampling.

Table 7-5

BIDS SCHEDULES BY UNIVERSITY 1/

(In US\$000)

<u>Federal Universities</u>	<u>SEMESTERS</u>								<u>TOTAL</u>
	<u>I</u>	<u>II</u>	<u>III</u>	<u>IV</u>	<u>V</u>	<u>VI</u>	<u>VII</u>	<u>VIII</u>	
<u>Works and Installations</u>	<u>25,225</u>	<u>25,365</u>	<u>28,630</u>	<u>3,050</u>	<u>2,900</u>	<u>4,930</u>	<u>200</u>	<u>-</u>	<u>90,300</u>
Fluminense	6,600	2,600	9,800	200	-	2,300	-	-	21,500
Ceará	2,550	3,300	9,350	-	2,300	-	-	-	17,500
Amazonas	2,400	6,550	3,050	-	-	-	-	-	12,000
Maranhão	3,990	-	230	1,900	300	2,580	-	-	9,000
Goiás	-	7,650	850	-	-	-	-	-	8,500
Alagoas	5,850	-	1,450	200	-	-	-	-	7,500
Juiz de Fora	950	1,350	2,000	400	300	-	-	-	5,000
Mato Grosso	1,985	2,615	900	-	-	-	-	-	5,500
Acre	900	1,300	1,000	350	-	50	200	-	3,800
<u>Equipment</u>	<u>7,495</u>	<u>5,390</u>	<u>5,710</u>	<u>8,570</u>	<u>1,535</u>	<u>1,260</u>	<u>400</u>	<u>440</u>	<u>30,800</u>
Fluminense	1,780	400	510	3,250	-	810	400	350	7,500
Ceará	700	1,000	500	4,300	-	-	-	-	6,500
Amazonas	510	1,990	-	500	-	-	-	-	3,000
Maranhão	1,360	-	-	-	1,440	200	-	-	3,000
Goiás	-	-	3,000	-	-	-	-	-	3,000
Alagoas	770	2,000	-	230	-	-	-	-	3,000
Juiz de Fora	1,950	-	650	150	-	250	-	-	3,000
Mato Grosso	-	-	500	-	-	-	-	-	500
Acre	425	-	550	140	95	-	-	-	1,300
<u>GRAND TOTAL</u>	<u>32,270</u>	<u>30,755</u>	<u>34,340</u>	<u>11,620</u>	<u>4,435</u>	<u>6,190</u>	<u>600</u>	<u>440</u>	<u>121,100</u>

1/ Costs do not include contingencies.

## 2. Personnel training

- 7.15 The award procedure for teaching and technical-administrative personnel training fellowships will follow the normal procedures used by the Office of Coordination of Advanced Personnel Instruction in Higher Education (CAPES) of the Ministry of Education and Culture of Brazil (MEC). Specifically, fellowship awards for master's or doctoral level studies will go by the following procedures:
- a. CAPES and each participating university will determine jointly each year the exact number of places for the following year in each of the areas selected in accordance with the criteria indicated (see Chapter V, paragraphs 5.17 to 5.19).
  - b. In each participating university, the Departmental Council of the disciplines involved will propose professors as candidates for fellowships.
  - c. This initial proposal follows a process of internal evaluation within the university which normally involves advisory councils of the office of the deputy rector for research and post-graduate studies, and the personnel office. The internal process ends with approval by the rector of the university who proposes to CAPES the candidates from the institution in accordance with the number of spaces negotiated in advance and with all the other informations required by the CAPES.
  - d. The university's proposal is evaluated by CAPES personnel and specialized consultants hired by CAPES. These persons interview each candidate and give their opinion of all aspects concerning the fellowship, including the suitability of the candidate and the appropriateness of the specific studies program that the candidate intends to follow.
  - e. All the information and opinions are submitted to the Deliberative Council along with their amounts, programs and places of study. This approval is ratified by the Ministry of Education of Brazil when the studies are taken within the country. They are approved by the President of the Republic when they involve a fellowship for studies abroad.
  - f. They are also follow-up procedures for the fellowship students and others concerning their return to the university.

## 3. Technical assistance

- 7.16 MEC-CEDATE has a classified inventory of more than 2,000 prequalified consultants. That inventory was prepared with the assistance of CAPES and will be placed at the disposal of the participating universities to facilitate the work of selecting Brazilian consultants. In accordance with the terms of reference for each advisory service, which shall be

prepared and placed at the disposal of the Bank, the university shall propose the specific consultants that it wishes to contract. CEDATE will approve the proposal, following federal government regulations issued by the Department of Public Administration and Service (DASP).

- 7.17 In the event that highly specialized Brazilian consultants are not available in a given field, the participating university, with the approval of CEDATE, could contract international experts using procedures approved in advance by the Bank. In such case, resources could be drawn from the Bank financing.

G. Maintenance

- 7.18 Every university of the program will assume responsibility for maintaining the works, installations, equipment and furnishings built or bought during execution of the program.
- 7.19 MEC/CEDATE has prepared guides for adequate maintenance of the foregoing. These guides were reviewed by the Bank and found satisfactory. The universities of the program all have adequate maintenance programs that are the responsibility of the central university administration. This maintenance work is carried out through maintenance and repairs offices of the different campuses. These programs, however, will have to be modified to meet the new requirements produced by these works, installations and acquisitions planned for this program.
- 7.20 For the purposes of ensuring adequate maintenance (besides strengthening the regular staff), the university shall include in their annual budgets, as the works are turned over and the equipment acquired, the expenses to maintain them, as shown in detail for each university in Table 7-6. The cost of this maintenance was calculated by using 1% of the total cost of the works and installations and 2% for the total cost of the equipment.

Table 7-6

Annual Maintenance Costs

<u>University</u>	<u>Works and Installations</u>	<u>Equipment</u>	<u>Total</u>
Fluminense	215,000	150,000	365,000
Ceará	175,000	130,000	305,000
Amazonas	120,000	60,000	180,000
Maranhão	90,000	60,000	150,000
Goiás	85,000	60,000	145,000
Alagoas	75,000	60,000	135,000
Juiz de Fora	50,000	60,000	110,000
Mato Grosso	55,000	10,000	65,000
Acre	38,000	26,000	64,000
Total	1,080,000 =====	439,000 =====	1,519,000 =====



- 7.21 Even though it has been established that the participating universities will assume responsibility for maintenance, the executing agency agrees to present an annual maintenance plan for all the projects, within the first sixty days of each year, and for ten years as from the start of the program. This plan will give information about the budget allocations and the volume, quality and cost of maintenance actually carried out during the previous year. This condition shall be included in the loan contract.

H. Recognition of Expenses

- 7.22 In accordance with the information provided, and reviewed by the Bank, investments have been made in 3 of the universities, so as to be able to use the summer season. The amount of these investments is US\$14 million, itemized as follows: Amazonas University (US\$5.8 million); Ceará University (US\$5.4 million); Goiás University (US\$2.8 million). In addition to the foregoing, expenditures have been made to hire staff, who will be part of the central administration of CEDATE (US\$400,000) and the executing units in the universities (US\$600,000). It is proposed that any expenditures already made and to be made, in an amount equivalent to US\$15 million and charged against the local contribution and made under the program, before the date of the Bank's approval but subsequent to December 28, 1981, the date of the loan request, be recognized.

I. Lands and Studies 1/

- 7.23 The lands of the nine universities included in the program for new works and remodelings are the property of the institutions. The architectural designs, construction blueprints and technical specifications have been reviewed by MEC/CEDATE. All of the preliminary projects are completed, and approximately 70% of the final plans, including calculations of structures and installations, are also ready. During the analysis mission (August, 1982) it was seen that the proposed lands are part of the existing campuses and that their topography and environmental conditions are acceptable and suitable for the projects presented to the Bank.

J. Design Criteria 2/

- 7.24 The architectural projects of the universities were prepared by local architects hired as consultants and architects of the executing units to prepare the projects or by the architects of the program executing units. MEC/CEDATE acted as guiding entity for the design criteria and established standards such as functional and nonluxurious architecture, along with standards for space, recommended area for teaching places, total areas for higher education and for each type of activity on the campuses. Following these parameters, the universities prepared their

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1/ Annex 18 shows the physical plants of the participating universities.

2/ All these technical, institutional, financial and socioeconomic support documents for each project are in the files of the PSD/PRA division. These documents consist of 184 volumes.

campus projects, buildings and supplementary works such as infrastructure, surfaces and green space.

- 7.25 After the needs of space and flows between the different areas of the campus were determined, the dimensions and forms of the buildings were established and located in the campuses in accordance with a general physical development scheme. The different universities developed their own architectural languages more suited to their regions of influence, the cultural environment and in accordance with existing structures.
- 7.26 In the four universities of the sampling, the only one that is developing a new campus is the University of Amazonas in Manaus. The others are preparing the buildings as part of existing campuses. The Federal University of Amazonas is an atypical case because its campus in Aleixo is located in the midst of an independent jungle area and on extremely hilly terrain.
- 7.27 The design criteria that prevailed in this case were: a) respecting the physical environment in constructing the buildings and supplementary works so as to avoid costly and unnecessary excavation and fill (slopes and different levels were used to advantage in locating the buildings); and b) providing maximum environmental comfort to the university population throughout the entire year without resorting to costly environmental controls such as air conditioning. The result of following these criteria was a design based on low pavilions connected by covered pedestrian walkways and separated by gardens to be planted with local plant species.
- 7.28 The system adopted allows the university population to move about during the rainy season over paved and covered walkways. The teaching and research spaces are cross-ventilated because the pavilions are oriented toward prevailing winds. As protection from the sun and the tropical heat, a double roof separated from the spaces that house university activities was used. This double roof, as can be observed in the figures of Annex 19, provides not only shade but also a forced circulation of air (like the draft in a chimney) because of its section with an opening oriented toward the prevailing winds. This produces an environmental cooling effect.
- 7.29 The design of the campus is based on excellent results of a similar design adopted by the same architect approximately 15 years ago at the National Research Institute of Amazonas located in the city of Manaus. The specifications of the building and finished materials for the university buildings took into account the experience of the INPA and the excellent state of repair of its earlier building after 15 years of existence.
- 7.30 The approach taken at the other universities is more traditional and tends to continue the architecture of existing buildings. The designs are generally of good quality and adequate to the functions for which they were designed.

K. Level of Preparation of Projects <sup>1/</sup>

- 7.31 It was seen that the degree of preparation of the preliminary plans, the final designs and their economic and financial feasibility met Bank policies.
- 7.32 In effect, more than 70%, in terms of cost, of the final designs required to start execution of the new work is available for the plans of the universities included in the representative sampling. In addition, it has been determined that all the projects of the representative sampling are economically and financially feasible.

L. Inspection and Supervision

- 7.33 The Bank's inspection and supervision of the program will be conducted through the local Bank office in Brazil which is believed to have suitable personnel to carry out this work satisfactorily.

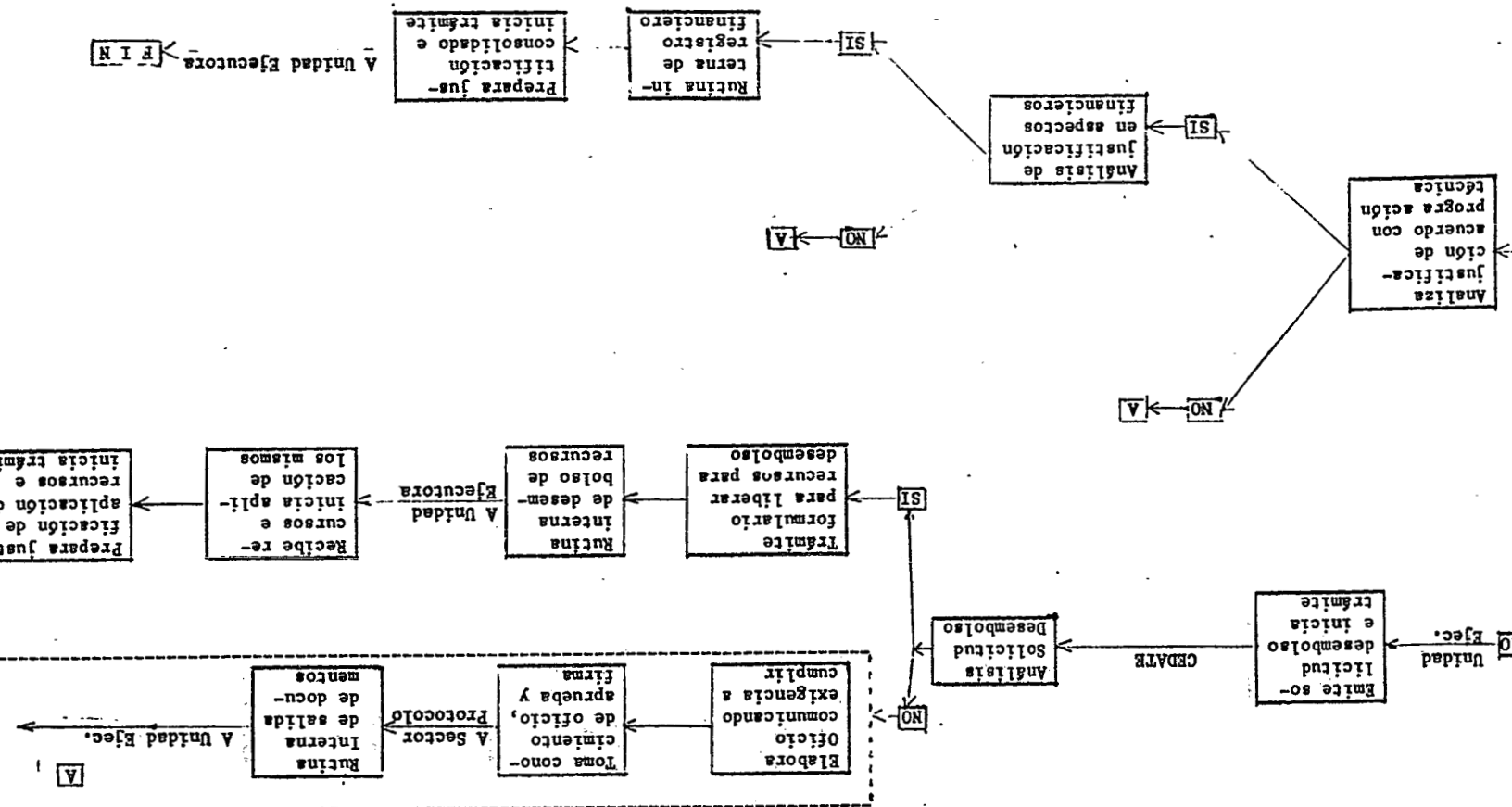
M. Financial Flow of the Program

- 7.34 The resources of the program would be included in the MEC budget and earmarked for transfer to the executing agents under its administration, as established in the agreements to be signed by MEC/CEDATE and the participating federal universities, and by MEC/CEDATE and CAPES, as well as an agreement on the pertinent regulations of MEC/CEDATE. According to these agreements, funds would be released on the basis of an investment timetable prepared and approved for each executing agent in accordance with the recommendations of CEDATE which will take care of inspection work for the program. CEDATE will also recommend suspension of disbursements for a federal university in the event of irregularities or if the program's objectives are not being achieved.
- 7.35 MEC shall transfer resources from the IDB and the local contribution in accordance with the budget law of each fiscal exercise to the account of project MEC/IDB-III.
- 7.36 The disbursements will be requested by the executing agents in accordance with the procedures established with CEDATE. Details of this procedure are given in Annex 20.
- 7.37 Table 7-7 below shows the general disbursement scheme.

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<sup>1/</sup> All the technical, institutional, financial and socioeconomic support documents for each project are in the archives of the PSD/PRA division. These documents consist of 184 volumes.

## MECHANISMS OF DISBURSEMENT - CEDATE/EXECUTING UNITS



N. External Auditing of the Program

- 7.38 The financial statements of the program will be submitted to the Bank with the certification of the Central Secretariat of Internal Control of the Office of the Secretary of Planning of the Office of the President of the Republic, during the program execution period.

O. Evaluation of the Program

- 7.39 The objective of program evaluation will be to verify the attainment of its goals, to analyze any problems that came up during execution and to determine the impact of the program in terms of its general objectives. For this purpose, the program evaluation shall be as explained.

1. Ongoing evaluation

- 7.40 Project and university selection criteria were established for the ex-ante evaluation phase of the life cycle of the program. These were taken from the objectives and goals of the program. These criteria and conditions in turn served as the foundation for the ongoing evaluation process which is described as follows: (a) approval of the loan - conditions of execution; (b) execution - first phase (evaluation during the first 2.5 years of execution); (c) middle term review (which includes a review of progress 2-1/2 years after the first disbursement); (d) final reports from the borrower (which should come after the final disbursement); and (e) ex-post evaluation (four years after the final disbursement).

2. Evaluation stages

- 7.41 These will include progress and impact evaluations, in accordance with criteria set for this purpose. These criteria will be included in the loan contract. An initial progress report will be prepared 2-1/2 years into program execution. On the basis of this report, there will be a through evaluation of progress and impact. Five years after the final disbursement, an ex-post evaluation of the impact will be conducted. The participating universities will employ instructor students during the evaluation stages.

3. Necessary indicators <sup>1/</sup>

- 7.42 The necessary indicators for ongoing evaluation of the program are the following:

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<sup>1/</sup> These refer to the years of the program execution period, starting with the year prior to the start for the purpose of establishing a base of comparison.

a. Teaching

- i) Candidates enrolled in the classes and places of the first year, by year and field;
- ii) Enrollment by field;
- iii) Number of graduates by year and field;
- iv) Academic performance rates (promotions, repeats and so forth); and
- v) Reviews and restructuring of study programs and teaching methods.

b. Research

- i) Proportion and number of professors engages in research by field of knowledge;
- ii) Research conducted and its major products or findings, by field of knowledge; and
- iii) Socioeconomic use of products or findings of that research.

c. Extension

- i) Number and proportion of professors and students engaged in extension, by field of knowledge;
- ii) Extension activities carried out, by sector served; and
- iii) Discernible results of these activities in the local area and the region.

d. Support to primary and secondary education

- i) Teachers trained, by discipline and academic level;
- ii) Educational research conducted, products of research and use of results within education system; and
- iii) Extension courses, advisory assistance and other assistance provided.

e. Instrumental goals

- i) Number of professors trained in: (a) special fields; (b) master's degree; and (c) doctor's degree, by field of knowledge.

- ii) Effects of training in the following statistics:
  - a) proportion of professors with specialization
  - b) proportion of professors with master's degree
  - c) proportion of professors with doctoral degree
- iii) Comparison of these statistics with average statistics for the federal university system.
- iv) Number of members of technical-administrative staff trained and their distribution by area;
- v) Technical advisory assistance received, by area, with specialization of consultant-days employed;
- vi) Number of square meters built, by type of area;
- vii) Effects of construction on the following statistics:
  - a) total area per student
  - b) academic area per student
  - c) academic area in good conditions of use, by student.
- viii) Comparison of preceding statistics with averages for the federal university system.
- ix) Laboratories and libraries equipped; and
- x) Volumes acquired for library (books and periodicals).
- f. Operational efficiency of the university
  - i) Operating and maintenance costs per student, per professor, per administrative employee and per square meter built; disaggregated by academic or administrative unit; and
  - ii) Student to professor ratio, by academic unit or program.
- g. The university and its environment
  - i) Socioeconomic information about the region or community in which the university operates.
- h. The labor market
  - i) Information about level of employment and unemployment of professionals, by region and occupation, and employment salary levels; and
  - ii) Follow-up of graduates. Information in accordance with system to be implemented at each university.

## VIII. ECONOMIC EVALUATION

This chapter deals with the economic evaluation of the program, examining higher education in Brazil from the point of view of the supply and demand of college graduates. Then the program is examined in terms of its economic importance, the efficiency of the universities, the costs and benefits and the income distribution effect. The chapter ends with the summary, conclusions and recommendations, demonstrating the economic feasibility of the proposed program.

### A. Introduction

- 8.01 The purpose of this evaluation is to provide an assessment of the economic sense of the proposed program. Specifically, it is intended to establish the contribution to the Brazilian economy of the resources to be invested in a university development program in a manner which facilitates its comparison with other investment alternatives. At the same time, an assessment of the role of higher education in Brazil is made from an economic perspective.
- 8.02 The supply of university graduates is viewed as the outcome of the response of the higher education system to social demand pressures. The latter are induced by a perceived wide differential in professional salaries with respect to the private costs of education, and the expected favorable prospects of employment in professional occupations. The demand for university graduates is derived from the change in the structure of the Brazilian economy in the last two decades, in addition to its high rates of growth during the same period. These developments in the labor market have shaped the expectations of people with regard to higher education, thus inducing a rapid expansion of social demand. The higher education system, in an effort to meet this demand, has expanded at very high rates, with an adverse impact on the quality of education. The proposed program is intended to respond to such deficiency.
- 8.03 Given the nature of the project it is not always possible to quantify adequately its costs and returns. However, to the extent that the project represents a substantial amount of resources to be allocated over future years, it is highly desirable to establish its economic significance in view of the critical capital and expenditure requirements of many other sectors.



B. The Economics of Higher Education in Brazil

1. Present structure

- 8.04 Brazilian higher education is characterized by its diversity in terms of geographical distribution and degrees of quality. The large number of institutions of higher education include well-known establishments with a reputation for excellency, as well as a number of institutions that barely serve the social demand for university diplomas. As expected, the Southwest region which includes the economic base of the country (São Paulo - Rio de Janeiro - Belo Horizonte) has, by far, the highest proportion of university students (1,583.3 per 100,000 people), the highest number of applicants (2,055.5 per 100,000), and offers the highest number of places (501.2 per 100,000). This contrasts sharply with the Northeast, with a population of 35 million, a poor country within Brazil. In this region, 574.3 per 100,000 inhabitants attended a higher education institution, while 860.4 competed for 139.6 places in 1980. Demand pressures are also more pronounced in the Northeast and North with 6.2 and 7.1 applicants per place compared with 4.1 and 3.6 in the Southwest and South respectively. The highest ratio of applicants to places is that of the Mid-West region, particularly affected by the economic structure of Brasília. When quality factors are taken into consideration, this diversity further favors the more developed regions which include the most reputable institutions (São Paulo, Rio de Janeiro, Campinas, Vicosa).
- 8.05 These regional characteristics are significant because of the acknowledged relative immobility of the Brazilian population across regions. In point of fact, there is a surprisingly high proportion of faculty members at the Universities who were born in the same region, educated in the local university and, although, they might have gone to study abroad, they have returned to their regional university. Students from other regions are usually a small fraction of the total, and most of them return to their region of origin. The Brazilian university has, thus, a well-defined regional character. Furthermore, even within regions and within the university system there are considerable disparities among universities. This is the case of Fluminense in Rio de Janeiro with a poor endowment of resources compared with the Federal University of Rio de Janeiro, and Brasilia a well-endowed institution compared to Goiás, only two hours away (See Annexes 21 and 22).
- 8.06 The structure of Fields of Study by region (See Annex 23) shows the relative homogeneity of the composition of fields of study in each region except the Mid-West (which includes Brasília). This suggests the "non-specialized" character of higher education, in terms that it does not closely respond to the economic characteristics of the region, but follows a traditional pattern dominated by the Social Sciences and Humanities.

## 2. Recent development

- 8.07 Perhaps the most significant development in higher education in Brazil in recent years has been the fast growth of graduate programs. In 1961, the first formal and structured graduate program was created, although the University of São Paulo had for several years operated programs at comparable levels. By 1966, 33 master and doctoral programs were in operation: by 1971, there were 231 master and 98 doctoral programs. In 1982 there are nearly 1000 graduate programs in 63 institutions.
- 8.08 This process was part of the explosive growth of higher education in the 1970s. The number of places offered per year increased from 145,000 in 1970 to 403,000 in 1980, and the number of students in institutions of higher education increased from 456,000 to 1,345,000 in the same period. However, while the number of students in the private institutions was 3.7 times higher in 1980 than in 1970, in the public universities this ratio was 2.4. Given the well-known difference in quality between the two types of institutions, one must conclude that, in the aggregate, overall quality declined.
- 8.09 This is indeed the most common charge against the expansion of higher education in Brazil; i.e. that it has expanded to meet a social demand at a low level of quality. This must not be interpreted, however, as the failure of the system to meet some of the most demanding requirements of the economy. For example, several universities have developed a reputation for excellency in specific fields: Vicosa and Ceará in agriculture, Minas Gerais in metallurgy, Unicamp, São Paulo, etc. At this end of the quality spectrum, in fact, the universities have performed quite satisfactorily. Obviously such levels are not expected to be generalized through the higher education system; but the 65 universities, out of the 875 institutions of higher education, should be expected to provide both the highest quality standards and a solid basic level of academic training.

## 3. Current issues

- 8.10 One of the most frequently addressed issues - and the main target of the proposed program - is the university's apparent difficulty in training professionals, and generating research and extension services at a level of quality which is appropriate to the requirements of the economy. If as mentioned previously, some universities have been highly successful in meeting, at a level of excellency, the requirements of certain fields, the great majority of institutions of higher education need considerable improvements in their capacity to produce the type of human resources and services required by a dynamic economy. 1/ In the absence of local

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1/ For example, there is a considerable amount of "retraining" by employers. There is also evidence that some employers in São Paulo send engineering graduates from mediocre schools to take a "leveling" course in the University of São Paulo before joining the regular staff.

opportunities many students have obtained abroad academic skills which become highly marketable upon their return. Local institutions have perceived this market and substituted the imports, but quality has been then sacrificed in the rush to meet an excessive demand. Market imperfections make it difficult for suppliers to produce a mix and level of skills which are relevant to the needs of society. This is an area where the Federal University System has much responsibility in terms of adequate planning, since social demand alone is not an appropriate signal to invest resources in education.

- 8.11 This leads to another crucial issue in the economics of higher education in Brazil. As with any other commodity, a highly subsidized price will exaggerate its quantity demanded. Public university education in Brazil, having such low price compared to its potential private value, has had as much an explosive demand as many public utilities. From a purely economic point of view the two types of commodities are more similar than what they appear to be. Yet, there has been considerably more planning of investments in the latter than in education. The central issue is that the Government has perceived as its responsibility the provision of higher education at a level that will satisfy identified demand at a highly subsidized price. This is most likely to interfere with any emphasis on quality. Although, beyond economics, society could assign the Government such responsibility, there can be no avoidance of costs; and public funds would not be sufficient to satisfy the excessive demand. In this sense the market has taken over, and private institutions are filling the vacuum.
- 8.12 This is feasible as long as there is a clientele willing to pay private costs, which is only too clear in Brazil with the proliferation of private ("commercial") institutions. Despite much criticism, the fact is that hundred-thousands of people would not demand and pay for a service that would be worthless to them. Certainly, there are problems in trying to employ skills of poor quality; indeed, this is a frequent complaint of employers who must retrain their recruits due to the deficiencies of their academic training. Again there is no avoidance of costs. Therefore there will be very real gains in improving the level of quality of higher education, not only to the individual but to the economy.
- 8.13 The Government would do well in letting the market meet the requirements of social demand and concentrate on providing the high quality service demanded by a dynamic economy. This may require a substantial subsidy since it will include the type of product not provided by the private supplier: education to poor but qualified students, productive research with "hard-to-recover" costs, extension services of a social (as opposed to private) nature, and the activities proper of the role of a university as a source of social change.

#### 4. Prospects

- 8.14 Presently, there is considerable public discussion on the future structure of the university system. Although the proposed reforms are mostly related to the institutional and legal nature of the federal universities within the Government structure, they will have important implications on the critical question of the autonomy of the university. It is hoped that the university will remain sufficiently independent to be able to carry out its responsibilities without a dampening bureaucratic interference.
- 8.15 It is also expected that this consolidation of the federal university system would set the stage for a more rational planning effort at the level of each university. This is perhaps the most needed task for the universities, especially as they will be directed to relate more closely to their medium, the main "theme" of the proposed program. It will be required that the university substantially reduce its ignorance of the region in which it operates so that a rational planning effort may be undertaken. At present, this activity is rather deficient. Many universities of the system do not have a coherent view of the requirements of the community which they intend to serve. Adequate planning at the university level will have to be the basis of any strategy which does not represent a drain on scarce budgetary allocations to education.
- 8.16 The issue of reducing the level of subsidies to higher education by establishing a tuition charge is expected to be under discussion in the near future. Given present charges, virtually zero, a modest increase will be a significant contribution to the finances of the university. The establishment of such a system, however, will have to necessarily include a transfer or credit system to guarantee access to the poor but qualified student -a major distortion of the present system.

#### C. The Supply of University Graduates and Services

##### 1. Resources

- 8.17 There are 875 institutions of higher education in Brazil. Sixty-five of these are universities; the rest are the so-called "instituições isoladas" ("isolated institutions"), or specialized schools and institutionalized training programs in specific areas. Of the sixty-five universities, 34 are federal universities, 9 are state universities, 2 are municipal universities, and 20 are private. Fifteen of the 20 private universities and 4 of the 9 state universities are concentrated in the south-east region, while the federal system has at least one university in each state. This system is, therefore, the only available alternative for university education in most regions outside the south-east. The system is highly diverse. It includes well-endowed as well as very modest institutions; universities known for academic excellency and institutions which definitely require considerable improvement in their programs.

- 8.18 The number of faculty members has increased substantially in recent years to respond to the increase in enrollment, and has reduced slightly the number of students per faculty member, as shown below:

Table 8-1

Brazil. Faculty in Higher Education, 1978-1980

<u>Year</u>	Number of Teachers and Student/Teacher Ratio in:					
	<u>Higher Education</u> <u>Institutions</u>		<u>Universities</u> <u>(65)</u>		<u>Federal</u> <u>Universities (34)</u>	
1978	98,172	12.5	53,448	10.3	30,031	8.7
1979	108,821	12.1	63,658	9.6	37,536	7.4
1980	116,827	11.8	72,220	9.0	43,234	7.1

Source: IBGE, Anuario Estadfstico do Brasil, 1981.

- 8.19 The Federal universities led this change with a rate of increase of 44% between 1978 and 1980, compared to 19% for the system of higher education institutions. The significance of these figures is that they characterize the expansion of higher education in Brazil: a rapid expansion of instruction with part-time faculty. Although the ratio of students to teachers seems low, it does not reflect the actual availability of the professor at the university. This is due to the large fraction of part-time faculty employed, nearly 53% in 1980. In fact, this has been a basic characteristic of university teaching in Brazil, where as much as 74% percent of the faculty had part-time status in 1974.
- 8.20 The overall increase in full-time positions has been consistent with the increased importance of research and other non-teaching activities. However, there is also a considerable fraction of faculty positions allocated to administrative duties but shown as full-time faculty. The aggregate impact of these characteristics is that the actual accessibility of the faculty is low. This, and the explosive rate of growth of the number of instructors necessarily have had an adverse impact on the quality of education.
- 8.21 Perhaps less significant has been the change in the qualifications of the faculty. The proportion of faculty members with Master and Doctorate degrees increased from 23.0% in 1974 to 28.3% in 1980 and those with some specialization or training beyond the basic university degree increased from 22.5% to 25%. As a result the proportion of those with only a basic university diploma declined from 54.5% to 46.7%.
- 8.22 The changes from part-time to full-time status and the higher academic level of the faculty are essentially qualitative changes which require a drastic change in the orientation of the university, one that will be less concentrated on instruction, and more concerned with academics, in a broad sense, and the development of a full-fledged university environment.

- 8.23 A basic constraint for the universities to retain qualified personnel is the structure of salaries for professionals. The private sector generally pays higher salaries, but the autonomous public sector, comprised of the many public-funded, specialized, independent institutions, is one of the main competitors of the university in the market for qualified professionals. This leads the universities to rely heavily on part-time hiring as the only means to retain qualified and experienced faculty.
- 8.24 Given the relative disadvantage of the university to compete in the market for professionals, it has resorted to training its own young faculty members by facilitating their post-graduate education through scholarships. For the most part, this strategy has been successful as many individual beneficiaries are usually committed to a university career or are required to work for the university upon completion of their programs. A large number of them, however, are also hired by other institutions.
- 8.25 The university, therefore, must provide other non-monetary benefits to attract qualified professionals. This includes research facilities, non-teaching activities, and the reputation of the university itself. As shown in Annexes 21 and 22, cost per faculty member could be as high as US\$110,000 per year for the University of São Paulo but below US\$45,000 for the four universities in the sample.
- 8.26 One of the most critical constraints on the operation of the university is the annual budgetary allocation. In a period of financial difficulties for the Federal Government, budget cuts affect drastically the operation of the universities, which may not be considered a critical priority.
- 8.27 The university adjusts by shifting to more part-time personnel and eliminating marginal programs. Rarely can the university reduce the number of places offered. Overall quality, therefore, is likely to decline.

## 2. Supply of first year places

- 8.28 The number of places offered by Higher Education Institutions was nearly 400,000 and remained relatively unchanged in the last three years compared to previous years. In fact, between 1970 and 1976 the supply of places grew at annual rates between 9.6% and 39.4%; while between 1977 and 1981 these rates fluctuated from zero to 2.9%. The federal institutions which include the 34 federal universities and 12 specialized schools offer 16% of the total number of places.
- 8.29 There was also a significant change in the structure by fields of study which showed a tendency toward science and technology and away from Arts and Letters, as shown below:

Table 8-2

Brasil, Higher Education: Composition of Places Offered  
and Applications by Field of Study, 1975-1979

	<u>Percentage change in:</u>	
	<u>Places Offered</u>	<u>Applications</u>
	<u>(1975-1979)</u>	
Exact Sciences and Technology	117.2	23.4
Biological Sciences and Health Professions	97.9	9.4
Agricultural Sciences	91.3	25.7
Social Sciences and Humanities	95.7	16.3
Arts and Letters	56.9	2.5

Source: MEC/SASu, Boletim Informativo, March 1980.

- 8.30 The general tendency has been for the number of places offered to follow the number of high school graduates, as shown in Annex 1, page 8). In fact, the ratio of places offered to the number of high school graduates has been as low as 1.05 in 1975 and has increased to 1.46 in 1980.

3. Social demand

- 8.31 Perhaps the most important single issue concerning the explosive growth of higher education has been the nature of this expansion, which has implied a deterioration of its quality, and has not responded to the needs of the economy.
- 8.32 The considerable growth in demand for university education has been caused by the substantial differential between expected income and private costs to individuals. Tuition charges are practically zero in the public universities, and meals are provided at a cost to the student of less than US\$1,00 per day. The financial cost to the student of attending a public university amounts to nearly US\$1,000 per year. Taking into consideration an opportunity cost of his time of two minimum salaries (US\$2,000 per year), he makes an investment of about US\$3,000 per year by attending the university. With this investment, he buys the opportunity to enter a highly dynamic market for professionals. It is clearly an efficient private decision as shown by the analysis of wage differentials (see Annex 26). Therefore, as long as present conditions prevail, most high school students will be applying for admission to public institutions. They have been even willing to pay the sometimes high tuition charges to attend private institutions.
- 8.33 The ratio of applications to places offered has increased consistently throughout the period. In fact by 1980 the number of applications were three times higher than the number of new high-school graduates. It may not be an exaggeration to say that almost anyone with a high school degree believes he should enter the university, and this may not be due to

distorted perceptions but the reflexion of special characteristics of the market, which too often requires a degree without further qualifications. It may well be that a degree is no more than an admission ticket to participate in the market. This is consistent with the private sector's reported problems of having to retrain university graduates. It has been reported that test scores of entrance exams for admitted students have frequently approached the probabilistic score obtained by answering the multiple choice questions in the test at random.

- 8.34 The number of high school graduates was nearly 600,000 in 1980, and is increasing at a rate of more than 9% per year. The number of applicants in 1980 was 1,800,000, and the number of places offered about 400,000. While the ratio of applicants to places was 4.5 for the system, it was much higher for the public universities, as shown in Annexes 21 and 22. Clearly the private cost of higher education relative to expected earnings is a significant factor in the determination of this demand.

#### 4. The Output of the university

- 8.35 The higher education system has closely responded to the social demand for education. The ratio of high school graduates to university places offered has been as low as 1.05 and not higher than 1.56 in the last ten years (See Annex 1, Page 8). These ratios seem to reflect an expansion of places consistent with the expansion of high school degrees.
- 8.36 The university system produced 91,125 graduates in 1979 of which 43,892 graduated from federal universities. The latter figure is one-fifth of the total number of graduates produced by the institutions of higher education in Brazil. In addition, 10,818 Master Degrees and 410 doctorates were granted. The universities in the program graduated 10,300 students in 1979. Any change in their contribution to the economy, therefore will not be insignificant. Although the federal system will be under strong pressure to meet social demands for higher education, the private sector is most likely to meet the expansion of demand in the near future as the federal universities consolidate the expansion of recent years.
- 8.37 In addition to instruction, the universities produce the bulk of research output in Brazil. In agriculture, for example, EMBRAPA - the most important research institution in the sector employs 1,560 researchers recruited for the most part, from the faculty of the universities, where they initiated their research projects. It has been said that agricultural research is what characterizes the modern and latest stage of agricultural development in Brazil. Virtually all of this research has been initiated at a university. In 1980 university agricultural programs published 1,692 titles on ongoing research projects. Success stories are not infrequent: For example, the University of Viçosa developed a soybean strain in 1980 which will generate additional output of soybeans worth several times the university annual budget.



- 8.38 Universities are also considerably involved in extension activities. In fact, this activity has reached the level of specialization in Fluminense - one of the institutions in the proposed program. Although extension is to a large extent an input to academic training and research, it also provides substantial benefits to the community. Nowhere is this more evident than in Niteroi, where Fluminense has modestly but effectively taken responsibilities normally assigned to welfare agencies: it is practically operating the health education and social services program for the neighborhoods that surround it.

D. Demand for University Graduates and Services

1. Structural Change of the Brazilian Economy

- 8.39 The demand for university graduates is a function of the level and structure of economic activity. Clearly as the economy has evolved from an agrarian society to an industrial export-led economy; the structure of demand for professionals has shifted towards a technology-centered professional labor force. Part of the criticism of the university has been its alleged failure to adjust to this change in the structure of demand. While this change has been a long-run trend, even within a short period of time there has been a significant shifting in terms of the composition of output and consequently in the structure of demand for professionals. Table 8-3 shows the aggregate indicators of structural change in the past twenty-year period, and in relation to the rest of Latin America.

Table 8-3

Brazil: Indicators of Structural Change

<u>Average Share of Real GDP</u>	<u>Brazil</u>		<u>Average for Latin America</u>	
	<u>1960-64</u>	<u>1976-80</u>	<u>1960-64</u>	<u>1976-80</u>
Agriculture	13.4	7.9	16.0	11.1
Secondary sector	40.5	45.0	40.6	42.8
Tertiary sector	46.3	47.1	43.4	46.1
	<u>1960-64</u>	<u>1979-80</u>		
Aggregate Public Expenditure as % of Current GDP	26.6	37.3		

Source: IDB/DES, Brazil, Socio Economic Report, 1982.

- 8.40 The relative increase in the participation of the secondary sector, especially manufacture exports, has not only generated a large demand for professionals, but it has also had a critical impact on research activities. Agriculture has also become more research-intensive.

- 8.41 The labor force in non-agricultural occupations increased from 42% in 1950 to 55% in 1970. Annex 24 shows the pattern of growth of the Brazilian economy during the 1970's. While the output index for agriculture reached 166.7 in 1980, (compared to 100 in 1970) industrial output reached 251.2 and the transport and communication sector 263.1. Furthermore, within the industrial sector, civil construction and public utilities reached levels of 269.1 and 310.1, respectively. The growth of these subsectors is closely related with the execution of large infrastructure projects during the 1970s which demanded large numbers of engineers and technicians. By 1974, employment growth in the metal-mechanic, electric and communications sub-sectors ranged between 11% and 17% annually. The evidence is, therefore, conclusive concerning the fast pace of growth of demand for qualified labor by the more advanced economic sub-sectors.

## 2. The labor market

- 8.42 The rapid pace of increase in the demand for professionals has produced a wide dispersion in the salary structure. The following figures show the relative change in salaries for professionals in some of the most dynamic sectors between 1970 and 1974:

Table 8-4

Brazil. Increase in nominal salaries for selected sectors, 1970-74

	<u>Average Salary</u>	<u>Professional Salaries</u>
	(Percentage increase-nominal)	
Metals	159.1	195.6
Electric and Mechanis	153.7	175.2
Transport Equipment	174.4	372.0
Chemicals	181.1	200.7
Rubber	120.1	179.8

Source: MTb/SG, Boletín Técnico de CDI, 1980.

- 8.43 Professional salaries in a group of large industrial establishments in São Paulo increased 63% in real terms between 1969 and 1975, compared to 35% for skilled workers and 16% for unskilled laborers. <sup>1/</sup> An annual sample of salaries taken by IBGE showed the following differentials:

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<sup>1/</sup> Suplicy, Em. Política Econômica Brasileira e Internacional, Petropolis 1977.

Table 8-5

Brazil: Salary Differentials for Administrative  
and Tech-Sci Personnel by Region. 1978  
(Minimum salaries-ms)

	<u>Administrative</u>	<u>Technical-Scientific</u>	<u>Total</u>
Rio de Janeiro	4.1	4.3	2.7
São Paulo	4.3	4.8	2.9
Sul	3.8	3.5	2.1
Minas/Esp. Santo	3.8	3.3	1.9
Nordeste	2.9	2.3	1.3
Distrito Federal	4.5	5.2	3.2
Norte/Centro Oeste	3.6	3.2	2.2
Total	3.8	3.7	2.2

Source: FIBGE, Pesquisa Nacional por Amostra de Domicilio 1978.

- 8.44 However, these averages obscure the wide dispersion of salaries even within narrowly defined occupations: in São Paulo, for example, where the average salary is 4.8 minimum salaries for the technical-scientific category, the mode of the distribution is 3.0, and there is a significant fraction in the range of 15 to 25 minimum salaries. This is explained, on the one hand, by the weight of public sector employment at salaries below those paid by the private sector, and, on the other hand, by the participation of the most dynamic employers who recruit their candidates almost exclusively from the best institutions. Specialized employment agencies have accumulated considerable information on the institutions and programs which best serve the requirements of their clients, to the point of establishing a ranking of universities and their programs which gives the diplomas their "signalization" power. It does not take much effort in Brazil to obtain a unique answer as to what institution offers the best program in agriculture, or electronics, or metalurgy. 1/
- 8.45 The point to be made, therefore is that despite the many distortions of the market, quality is eventually identified; and that such quality is translated into productivity and shown as salary differentials. A private employer certainly knows the value of productivity increments when he is willing to provide additional training to a candidate from a mediocre institution or pay a high differential to one from a reputable program.
- 8.46 A sample of salaries taken during the Analysis Mission showed the highest salary, at 40 minimum salaries, for a senior engineer at a large electronics firm graduated from the University of São Paulo, and the

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1/ This is indeed confirmed by the sample presented in Annex 26.

lowest among engineers, at 8.0 minimum salaries a civil engineer in Rio graduated from Fluminense. While the size of the sample (54 firm observations) is too small to isolate the influence of the quality of the institution, it, nevertheless, provides evidence of a substantial differential due to the reputation of the graduating institution: when the observations are grouped into two categories defined by a subjective opinion on the reputation of the university (see Annex 25), the salary differential is approximately 12 minimum salaries for engineers, administrators, and economists combined.

- 8.47 Of course, this differential is due to several factors some of which are not related to qualification. However, the main factor seems to be the characteristics of the employer itself (a large multinational corporation pays higher salaries than small local companies and the public sector), and well-paying employers are known to recruit from well-qualified institutions. Therefore, if only 30% of this differential is due to the quality of education, one may conclude that this difference in productivity between the two groups is approximately 3.6 minimum salaries or the equivalent of US\$3,600 per employee per year.

E. The Program

- 8.48 The proposed Program aims at the physical and academic consolidation of nine universities throughout the country. The Program responds to identified deficiencies in the operation of these universities, which have adversely affected the quality and effectiveness of their programs. The analysis below is based on a sample of four universities: Fluminense, Ceará, Amazonas and Goiás.

1. Economic significance

- 8.49 The proposed Program may be conceived within the framework given in the previous sections to consolidate the system of federal universities by upgrading the level of nine institutions which have been identified as having critical requirements for improving their infrastructure and programs resulting from the rapid expansion in the past decade.
- 8.50 Although a regional orientation has been given to the Program, each of the universities has its own merits and potential, not necessarily inflexibly tied to the main characteristics of the region. The truly significant contribution of the university will be the consistent production of a solid education at a high level of quality to satisfy the requirements of a dynamic economy, while providing an adequate environment for the development of research. It will be part of the activities of the university itself to develop the specific interests which may be local, regional, national or international in scope.
- 8.51 An effort is being made to focus on the academic consolidation of the university. This effort should continue as part of the operation of each university and should include a more rational planning of the

activities of each institution. Any regional orientation should be designed only on the basis of an assessment of the need of the region which the university can efficiently served.

## 2. Efficiency of the university

- 8.52 The implicit objective of the university's administration is to maximize the level of activities given a budgetary allocation, which is negotiated annually with the Federal Government. Within this year-to-year flexibility, the university makes marginal adjustments in terms of changes in structure, new programs, facility improvements, part-time faculty, etc. These changes are not always based on specific plans but on "internal demand", as departments compete for a larger share of the university's budget. As a result the university may be continuously facing bottlenecks generated by the fixity of its inputs: buildings, equipment and budget. Annex 21 presents some of the basic cost indicators for the four institutions in the sample. Annex 22 presents similar statistics for four selected universities of well known reputation in Brazil as a standard of comparison. The main indicators are compared in Table 8-6 below.

Table 8-6

Brazil. Cost Indicators for a sample of eight universities, 1980

	<u>Students/ Faculty ratio</u>	<u>Students Administrator/ ratio</u>	<u>Cost per Student</u>	<u>Cost per Faculty</u>	<u>Cost per m2</u>
Fluminense	12.6	6.8	2,393	30,077	373.8
Ceara	17.6	7.4	2,420	45,582	166.3
Amazonas	11.3	6.8	4,008	45,401	684.0
Goiás	7.7	3.9	4,122	31,647	253.6
Brasília	9.8	5.0	7,554	74,071	248.0
Rio de Janeiro	9.3	3.5	4,243	39,573	165.7
Vicosa	11.3	9.5	6,779	76,562	216.1
São Paulo	14.9	12.0	7,379	110,000	

Source: MEC/SASu, Boletín Informativo, 1980.

- 8.53 First of all, it must be noted that the ratio of applicants to places offered is significantly lower for the four universities (between 7.3 and 10.3) than for the University of São Paulo (14.9). Moreover, Fluminense University has a ratio of 7.3 compared to Rio de Janeiro with a ratio of 9.3 even though they are a short distance apart. Undoubtedly, these difference must be related to the reputation of the institutions -if not to their quality standards. This also applies to the University of Ceará with an established reputation relative to at least three other universities in the city of Fortaleza. However, the high ratio of the University of Amazonas (10.0) is to a large extent due to lack of alternatives. Given the level of these ratios, it may be assumed that the

universities are operating at full capacity in terms of their budgetary allocations, since in the short-run infrastructure may not be a constraining factor in terms of mere quantity expansion.

- 8.54 Operating costs per student are relatively low for the universities in the sample, compared to the four selected universities. This is due to the level and status of the faculty in the latter group. Which is shown by the cost per faculty ratio, as high as US\$110,000 per faculty member in the University of São Paulo, compared to US\$30,000 in Fluminense.

### 3. Costs and Benefits

- 8.55 The difficulties in calculating and even identifying the benefits of upgrading the quality of a university notwithstanding, an effort has been made to assess the economic returns of the Program that would permit its comparison with alternative investments. It must be noted that such was precisely the question faced by the Brazilian Government in the process of assigning budgetary allocations to this Program in relation to several other expenditure programs. Although there was no economic evaluation at the time, the Program served sufficiently urgent to warrant its priority.
- 8.56 The economic costs of this Program are related not only to the initial investment in infrastructure, but also to the amount of resources that must be allocated annually to keep it at a level of operation that will generate the benefits expected. The economic benefits are, primarily, the contribution of university graduates to the economy as specialized labor. Other benefits are perhaps less tangible, but no less realistic in their contribution: they include the product of research and extension activities, and the role of the university as one of any society's leading institutions.
- 8.57 The simple model presented in Annex 25 provides a general idea of what the flow of benefits generated by the Program should be in order to have an economically viable Program: The critical parameter is the increase in operation costs per student as a result of improving the academic level of the university, with respect to the increase in labor productivity of its graduates.
- 8.58 According to the model, which embodies simple but highly plausible assumptions, labor productivity should increase no less than 73% of any increment in operation costs required by the Program. Furthermore the following formula, derived from the model, provides a relation among investment per student, productivity per graduate and operating cost per student:

$$\text{Change in productivity} = \frac{1}{10.2} (\text{investment per student} + 7.5 \times \text{change in operating cost}) \frac{1}{}$$

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1/ Derived from last equation in Annex 25.

- 8.59 This is explained in Annex 25. For example an investment of US\$20 million in a university of 20,000 students which requires an increase in operating costs of US\$3,000 per student, will require an increase in labor productivity of no less than US\$2,300 per graduate for the Program to be feasible at a 12% discount rate. This increment in productivity is the equivalent of approximately 2.3 minimum salaries, a modest change with respect to the estimated salary differential by type of graduating institution, as shown in section D.2. and Annex 26.
- 8.60 For each of the universities in the sample, the following estimates of productivity increases have been derived:

Table 8-7

Brazil. Productivity, cost and investment ratios for  
universities in the sample  
(US\$)

	<u>Investment 1/</u> <u>per student</u>	<u>Increase in 2/</u> <u>operating cost</u> <u>per student</u>	<u>Required 3/</u> <u>increase in</u> <u>productivity</u>
Fluminense	1,580	4,096	3,155
Ceará	1,890	4,069	3,165
Amazonas	2,460	2,481	2,058
Goiás	1,745	2,367	1,904

- 8.61 These results show that given the planned investments per student for each of the universities, and an estimated increase in operating costs per student (due mainly to the improvement in quality and status of the faculty), labor productivity of each graduate should increase by an amount between US\$1.904 and US\$3.165 per year in order for the investment to have a rate of return of 12%. These figures seem plausible when compared with an approved differential of US\$12.000 per year (see Annex 24); they are 16 and 26 percent respectively of the average salary differential. Given the plausibility of these figures, the Program is very likely to be an efficient one.
- 8.62 There are at least two factors which will improve the returns of this investment: (a) the value of research and extension services and (b) the improvement in the university's operating efficiency which should keep cost increases under the levels assumed. The value of research could be substantial: as mentioned elsewhere, the value of the soybean strains

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1/ Present value of proposed investment per student presently enrolled.  
2/ Defined as a theoretical increase in cost required for each university in the sample to reach the average of the four selected institutions presented in Annex 22.  
3/ Estimated according to the formula in paragraph 8.58, derived from the model of Annex 25.

developed at the University of Viçosa and the Vaccination for cattle developed at the Federal University of Minas Gerais could finance their budgets for several years. 1/ EMBRAPA'S agricultural research has been estimated to generate US\$2.00 in benefits for each dollar spent. 2/

- 8.63 Given these considerations the investment will not only be feasible, but it is likely that it will have substantial net returns. However, the realization of these returns depend on how the university plans and organizes itself academically as the physical component is executed. That activity requires critical and immediate attention, and is reflected in the Selection Criteria and Project Conditions (See Chapter V-Sections C and D).

#### 4. Income distribution impact

- 8.64 Higher education in Brazil is considered to have a regressive impact on the distribution of income. 3/ Not only those who qualify to enter the university are already a privileged group, but it seems that the high level of subsidy in the public universities especially favors the higher income groups. This is due to the fact that successful applicants to the university come, for the most part, from private secondary schools available only to high income groups. The lower income groups, coming from public schools usually have to attend the private institutions, paying their full cost and not always receiving an acceptable level of training.
- 8.65 However, this is not a result of the particular policies of higher education; nor is it an specific problem of Brasil. This is a generalized social phenomenon in developing countries, which the university can only be expected to contribute to its debate. In fact, the significant contribution of the university in this respect will be through the assessment and open discussion of the most pressing social issues, and the recommendations that could help in shaping social policy.
- 8.66 The low income parameter defined for Brazil is Cr\$162,591 per capita per year (August 1982 prices). A student requires no less than Cr\$240,000 to survive while attending the university, taking into consideration the meal subsidies provided. Student loans and scholarships add up to no more than Cr\$4,000 per month, an amount which barely covers transportation expenditures. In terms of the Bank's low income evaluation procedure, direct benefits to the low income group are likely to be

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1/ Claudio de Mora Castro and Fernando Spagriolo, Science and Scientist in Agriculture: The Brazilian Case. Brasilia, 1982.

2/ EMBRAPA, Ano 9: Destaques dos Resultados de Pesquisa de 1981. Brasilia, 1982.

3/ The literature on this issue is extensive. Two studies are especially relevant to this Program: Universidade Federal Fluminense, Perfil dos Alunos Ingressantes em 1981 (Niteroi, 1982), and Teresa Albuquerque Guimaraes, Universidade do Ceará: Agente Distribuidor ou Concentrador de Renda (Fortaleza, 1982).



negligible, although as a result of extension services in education and health, some poor neighborhoods may receive substantial benefits. These benefits are small compared to the total "output" of the university, and are financed usually through specific public funds. It must be noted, that university education has contributed in the long run to open opportunities to students from working class parents, thus expanding access to professional occupation to the lower middle class. This is in itself a significant distribution impact, although different from the impact on the lowest income categories.

F. Summary and Conclusions

- 8.67 During the past decade, higher education in Brazil has experienced a rapid expansion in the number of institutions, programs, students and faculty. This expansion has taken place in response to the strong pressure of social demand for education, which in turn has been induced by the expectations created by a significant growth and change in the structure of the economy in the past two decades.
- 8.68 There is a considerable amount of evidence to suggest that the effort to meet the requirements of social demand has been in conflict with the expected concern for maintaining quality standards at an adequate level.
- 8.69 The federal university system, which operates 34 of the 65 universities in the country, has a serious responsibility, therefore, for the development of higher education. Consequently, it is attempting to consolidate the expansion of recent years by reorganizing nine universities identified to have critical requirements in terms of physical infrastructure and academic performance. The Ministry of Education, in cooperation with the universities involved in the Program, has assigned a series of projects which emphasize the physical consolidation of each of the nine universities. Although this has been for some time the primary concern, it has by now become critically important to focus on the academic and administrative component of the Program. Indeed a reasonable effort is being made on this front. But it will require a considerable effort on the part of the universities to establish a system that will ensure the efficient operation of the institution.
- 8.70 To the extent that this endeavor is successful, the benefits to be realized are substantial: the Brazilian economy will require in the near future, talented human resources that will lead the economy through considerable adjustments in agriculture, energy and mining technology and contribute with solutions to mounting social problems. The universities will have to provide these resources, Net benefits are likely to be substantial.
- 8.71 The evaluation proposed for the Program (See Chapter VII, Section O), plus the selection criterias and conditions established (see Chapter V, Sections C and D) will allow to know reasonable well the economic benefits that will effectively be achieved by the Program.

## IX. JUSTIFICATION OF THE PROGRAM

This chapter contains the justification of the program, with a brief analysis of the institutional justification concerning the central capacity for administration and supervision as well as that of the executing agents, the financial feasibility of the program, the technical justification as regards the works and facilities and equipment procurement, as well as from the technical viewpoint of higher education. Similarly, the socioeconomic justification is outlined.

### A. Educational Justification

#### Summary of general evaluations

##### 1. The importance of higher education

- 9.01 The basic functions of the higher education system are essential for the general development of Brazil. The sustained growth of production requires professionals trained in the most varied fields and, therefore, implies a high quality of instruction. Rational use of the country's natural resources and technological modernization, among many other aspects of development, require research on the part of the universities. By means of their extension activities the universities provide many social services, play a fundamental role in the cultural life of the country and in the dissemination of knowledge for all types of applications.

##### 2. The present situation of higher education

- 9.02 Student enrollment in higher education institutions in Brazil has grown rapidly over the last 20 years, especially between 1970 and 1980. This expansion has not been uniform in all components of the system, leading to considerable heterogeneity with major disparities between the educational institutions of different regions and between the different types of institutions. The most striking problem is not the diversity itself, but the fact that many institutions cannot adequately fulfill the basic functions for which they were created nor reasonably conduct the activities for which they were designed. Other universities, particularly in the southeast and south of the country, are outstanding centers of academic excellence.

##### 3. Higher education policy of the MEC

- 9.03 The present stage of the higher education system of the country primarily requires qualitative advances and emphasis on consolidation. The quality of education offered must be raised, research and extension

work must be promoted, the vacuums left by the rapid growth filled, and the weak components of the system strengthened. All this is called for by the policy of qualitative development of the Ministry of Education and Culture of Brazil (MEC). Due to the scarcity of resources, this policy implies limiting the excessively rapid growth that had been occurring in the higher education system. For the same reason, this policy also entails a time schedule of implementation, as it cannot be accomplished at the same time in too many institutions.

#### 4. Higher education development strategy

- 9.04 The Federal Government has given priority to federal universities, not only because it is directly responsible for them, but also because the general development strategy for higher education, drawn up in 1975, emphasizes first and foremost the consolidation of a regionally balanced group of high quality universities that will form the basis of subsequent qualitative development of other educational institutions. An important part of this strategy is the decrease of regional differences, to ensure that each state in the federation has at least one high quality federal university and to direct the programs so that the universities can contribute more effectively to the development of their respective areas in close relation to the needs of the environment.

#### 5. Development programs of federal universities

- 9.05 In addition to the normal budget allocations of the Federal Union to higher education, since 1975 the MEC has been conducting special development programs of strategic federal universities. Since this date, 13 institutions have been included in these programs, seven with partial financing from the Bank and from the Fund for the Support of Social Development (FAS) of the Federal Economic Fund. The principal aspects emphasized by these programs are key elements for the success of the MEC policy. The aim is to ensure the following in each university: a) a stable academic staff which is competent and devoted to university activities; b) adequate physical facilities on a reasonably integrated campus; and c) efficient organization that coordinates functions, subjects and resources as a coherently structured whole. These elements were previously required by the Brazilian university reform, but for various reasons were not fully achieved. Many gaps and weaknesses remained in the university system, including the federal institutions. In order to adequately meet the requirements of staff training and specialization for higher education, and those of the development of campuses, the Ministry has specialized agencies (CAPES and CEDATE). These agencies coordinate the normal and special programs of the MEC; they work closely together and have an efficient association with the other MEC offices.

#### 6. Basic orientation of the present program

- 9.06 The program analyzed in this report is based on the above considerations. It fundamentally consists of an effort to strengthen the relatively inadequate federal universities so that they may contribute more

effectively to the development of Brazil, with particular emphasis on the needs of the local and regional environment where they are located. The participating universities will preferably be those that are considered strategic, that have not had access to special sources of financing and that still have major unsatisfied needs. The program includes a reasonable regional distribution as well as the key components mentioned above.

#### 7. Program objectives

- 9.07 Even more than in the previous programs, the objectives of this program emphasize the qualitative aspects of university development. This is partially due to stricter governmental regulations and controls on the growth of university education. There are current presidential decrees that not only prohibit the creation of new institutions but the establishment of new degree programs and the hiring of additional staff for existing programs. The program objectives are therefore to raise the quality of performance of the basic functions of the universities, to promote the interaction of universities with their environment and to consolidate university reform in a regionally balanced group of federal institutions.

#### 8. Program goals

- 9.08 The program goals can be divided into two levels: one, the instrumental level, specifies the measurable results that it is hoped will be achieved during program execution; the other, the level of coordination with the objectives, specifies the results that it is hoped will be achieved in the substantive activities of the university (teaching, research and extension). Both types of results are likely to be verified at the end of program execution and may also be used for partial evaluations throughout the execution period.

#### 9. Connection with the other levels of education

- 9.09 The official pronouncements of the Brazilian government increasingly reflect a growing concern for the major shortfalls and problems as regards the quality of basic education that persist in rural areas of the country and in the peripheral urban areas. The third sectoral plan for education of Brazil (1980-1985) gives basic education the highest priority in the sector and the largest amount of resources earmarked for development. In order to raise the quality of teaching at this level it is imperative to emphasize teacher training in universities, as well as educational research and extension, which constitute a link between this program and the basic level of education. This connection is explicit in the program goals.

#### 10. Selection criteria

- 9.10 There are two types of requirements for the selection of universities. The first refers to the area or region where the university is located;

the second to the relative degree of need of the university compared to that of the other federal universities. All these criteria are consistent with the objectives and goals of the global program. The following tables illustrate the application of the regional criteria and to the extent of need of nine federal universities that will be able to participate in the program.

Table 9-1

Needs and Potentials of Areas in which Nine Federal Universities under the Program are located

	<u>UFAC</u>	<u>FUAM</u>	<u>FUMA</u>	<u>UFCE</u>	<u>UFAL</u>	<u>UFFL</u>	<u>UFJF</u>	<u>UFGO</u>	<u>UFMT</u>
1. Demand greater than 3 candidates for each place in the first year of university.	X	X	X	X	X	X	X	X	X
2. Relatively less developed region.	X	X	X	X	X			X	X
3. The area of influence is a special zone within the relatively developed region (areas with acute socioeconomic needs).						X	X		
4. Agricultural frontier area.	X		X					X	X
5. Centers of industrial or mining development.		X	X	X	X			X	
6. Vast underused forestry, water and agricultural potential.	X	X	X						X
7. Vast underused geological-mineral potential.		X	X	X	X		X	X	
8. Economic possibilities associated with the proximity of major market concentrations.									
a. Iron and steel, textile and milk products industries							X		
b. Industries that use intensive labor and services.						X			

Table 9-2

Indices of Requirements of Nine Federal Universities  
under the Program

<u>Indices of Requirements</u>	<u>UFAC</u>	<u>FUAM</u>	<u>FUMA</u>	<u>UFCE</u>	<u>UFAL</u>	<u>UFFL</u>	<u>UFJF</u>	<u>UFGO</u>	<u>UFMT</u>
1. Academic space in good condition per student is less than the average of the federal system (6.86 m2/student) (average of the nine universities: 2.98 m2/student).	X	X	X	X	X	X		X	X
2. Need to consolidate the campus (over 30% of the facilities are scattered outside the main university campus).	X	X	X	X		X	X	X	
3. Percentage of teaching staff with master's and doctor's degrees is less than 40%.	X	X	X	X	X	X	X	X	X
4. Ratio (enrollment/PETI) larger than the average of the federal system(9.3). (PETI: equivalent number of full-time teachers).		X	X	X		X	X	X	
5. More than 50% of the technical/administrative staff are insufficiently trained for the jobs they are performing.	X	X	X	X	X	X	X	X	X
6. Investments in equipment per student less than the average of the federal system.	X	X	X	X	X	X	X	X	X
7. Fewer volumes in the library(ies) than the average of the federal system.	X	X	X		X	X	X	X	X

11. Summary of evaluations of representative sample

- 9.11 The demand for higher education demonstrated by the universities in the sample is sufficient to guarantee a high rate of use of the physical and other facilities of these institutions. The number of candidates registered for the entrance examinations varies between 7.3 and 10.3 for each available place in the first year. This situation is common in Brazilian federal universities because the courses are free and, generally speaking, these institutions are the best higher education institutions in the country.

- 9.12 With the exception of the Fluminense Federal University (UFFL), the universities in the sample are located in relatively less developed regions of Brazil. The UFFL, however, principally directs its action to the poorest areas of the interior of the State of Rio de Janeiro (the "Baixada Fluminense" and the north of the State) with socio-economic indices that are similar to those of the less developed regions. This orientation is fundamental to the UFFL. It is precisely this that distinguishes it from the national and international major academic centers of Rio de Janeiro.
- 9.13 The areas in which the universities in the sample are located offer vast economic potential and are considered to be strategic by the federal government. These areas possess large reserves of land (FUAM and UFGO), water and forestry resources (FUAN) or underused mineral deposits (FUAM, UFGO and UFCE); they are centers of industrial or mining development (FUAM, UFGO and UFCE) or are situated near major market concentrations (UFFL).
- 9.14 The four universities in the sample operate in insufficiently integrated physical facilities. One of them (FUAM) still does not have a main campus and in the other three over one third of the facilities are off-campus. This makes it difficult to achieve the integrated university model prescribed by Brazilian university reform.
- 9.15 Moreover, the physical facilities of the four universities are insufficient to adequately meet the current level of student enrollment. The academic areas in good condition vary between 1.67 m<sup>2</sup>/student (FUAM) and 3.05 m<sup>2</sup> (UFGO), while the average for the federal higher education system is currently 6.86 m<sup>2</sup>/student.
- 9.16 As a comparison with the indices of the rest of the federal universities of Brazil, one of the universities in the sample (FUAM) has an insufficiently specialized academic staff, two universities (UFFL and UFGO) are slightly below the average of the federal system and one (UFCE) is clearly above the average. The proportion of the teaching staff with master's and/or doctor's degrees varies between 13.4% (FUAM) and 34.6% (UFCE). However, the average for the Brazilian federal universities (28.3%) is still far below the average of higher education institutions in developed countries.
- 9.17 All the universities in the sample have sectors in which there are weaknesses or insufficiencies as regards specialized training of technical-administrative staff. This is particularly notable for the laboratory support staff and the technical processing of library materials and other documents and information sources.
- 9.18 In the four universities in the sample, investment in equipment per student are lower than the average of the federal system. In all the universities, except for one (UFCE), the libraries have fewer volumes than the average of the federal system (approximately 100,000).

- 9.19 The unsatisfied needs mentioned above are due to the fact that the universities included by the MEC in the program are precisely those federal universities that have not been included in previous programs since the federal government's global strategy of university development was drawn up in 1975.
- 9.20 Experience and plans for teaching, research and extension in the four universities in the sample conform to the general conception of Brazilian universities, inasmuch as these are activities-aims that all the federal universities seek to achieve in close interaction with their social environment, whether this is the entire nation of Brazil or, as in the case of the institutions in the sample, regional and local. The emphasis placed by these universities on contributing to resolving specific problems or meeting concrete development needs of the respective region in which they operate is notable. However, there are some differences as regards the quality and the degree of preparation of the plans of activities-aims of the four universities. Some universities submitted extensive documents with detailed explanations and others very brief summaries of their objectives with respect to these activities. The schedules did not coincide in all cases. This has been taken into consideration in the conditions of eligibility for the projects and in the proposed evaluation system.
- 9.21 Neither of the four projects of the universities in the sample aims to expand student enrollment. The small increases expected in the total number of students can be explained by gradual improvements in the indices of promotion and retention. The objectives are fundamentally qualitative and concern strengthening, as stated in the general program objectives.
- 9.22 The proportions of resources earmarked for different components of the projects correspond to the needs of each individual university. The component of works and constructions will use the largest volume of funds, as is normally the case in investment projects (which do not include the operating costs of the universities during the execution period or during the useful life of these works and constructions in the costs). None of the projects include the construction of student residences or hospitals. The architectural designs are simple and functional.
- 9.23 Reasonable components are included for equipment, training and technical assistance. Only those advisory services, for which terms of reference had been prepared, were included.
- 9.24 Specification of all the components of the projects was conducted in accordance with the rules and standard procedures for the MEC-CEDATE, with close collaboration between this organization and the participating universities. Detailed technical information on these components is available in the Bank.



- 9.25 Each university in this sample has set up a "Technical Office" that has participated in preparing the respective project and will be responsible for coordinating execution. These units have sufficient specialized full-time staff to carry their appointed tasks.
- 9.26 Despite the standard procedures and rules for the preparation of projects, the universities were given a sufficient margin of choice to adapt these projects to the particular requirements of each institution.

B. Institutional and Financial Feasibility

- 9.27 CEDATE and CAPES have adequate structure, procedures, systems, staff and controls to handle the present volume of activities. For the new program, only the staff necessary for the central executing unit would be increased. In addition, they have vast experience in executing programs of this type, including one similar to the proposed program which has just been completed satisfactorily and was financed by the IDB. Moreover, the participating universities have already informally set up executing units, which have received and will continue to receive adequate advisory services, supervision and control on the part of CEDATE and CAPES. This indicates that the new program would successfully administered.
- 9.28 Financially the program would have a very limited impact on the budget of the MEC, as the average annual counterpart contribution would represent 1% of the 1981 budget and 7% of the funds allocated during this year to capital costs of higher education institutions. Furthermore, both CEDATE and CAPES have experience in executing programs on the scale of the proposed project and the universities manage budgets far larger than the funds they would need to administer under the program. For these reasons and due to the high priority assigned by the government, the program is considered to be financially feasible.

C. Technical-Constructive Justification

- 9.29 The works and the constructions proposed in this program are duly justified from the technical-constructive viewpoint. The analysis has indicated the serious problems faced by the universities in operating on inadequate campuses with insufficient facilities that are scattered around the urban network of the regional growth centers.
- 9.30 The physical objective of the program is to offer adequate facilities within the minimum standards of space established by the MEC/CEDATE.
- 9.31 The table of occupied premises and new premises to be constructed gives an overall view of the present facilities and those required to meet the said standards.

Table 9-3

Occupied Premises and New Premises to be Constructed (in m2) 1/

	<u>Area occupied</u>	<u>Adequate area</u>	<u>Area to be remodeled</u>	<u>Area to be constructed</u>	<u>Optimum area</u>
1. UFAC	7,875	3,947	5,040	8,571	18,774
2. FUAM	25,671	13,078	-	50,154	80,038
3. UFMA	58,746	27,540	-	46,823	87,625
4. UFCE	128,317	100,987	9,000	41,511	176,555
5. UFAL	85,306	56,322	-	47,652	125,348
6. UFFL	80,097	42,252	14,840	86,089	177,585
7. UFJF	83,325	70,845	-	29,982	109,034
8. UFMT	41,532	31,110	-	28,742	81,262
9. UFGO	<u>92,784</u>	<u>53,080</u>	<u>-</u>	<u>25,778</u>	<u>98,787</u>
Total	603,653 =====	399,161 =====	28,800 =====	365,302 =====	955,008 =====

9.32 The goals of the program are to remodel table structures and construct new buildings and facilities, avoiding as far as possible the use of makeshift premises for teaching and research activities.

9.33 The program is aimed at meeting a substantial part of the demand for space although, as the above table shows, it does not attain the levels established for optimum areas.

9.34 The designs, specifications and scheduling of execution of the program are practical and take into account the operation and maintenance of the buildings and facilities as well as obtaining the greatest possible benefit from the proposed investments. Program design is based on acceptable MEC/CEDATE standards and is consistent with other university works and constructions partially financed by the Bank.

#### D. Socioeconomic Justification

9.35 The proposed program can significantly contribute to increasing the productivity of graduate professionals, and to generating research and extension services. Available evidence indicates that the quality of professional training has a major impact on the productivity of professionals. If the university can efficiently establish adequate academic programs it will obtain a social rate of return that favorably compares with other profitable investments in the Brazilian economy. The conditions of the proposed program make achievement of this goal possible.

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1/ From data in volume II MEC/CEDATE.

B R A S I L

DATOS ESTADISTICOS DE LA EDUCACION SUPERIOR  
1970-1980  
EVOLUCION DEL NUMERO DE INSTITUCIONES DE EDUCACION SUPERIOR

REGION/AÑO	TIPO DE INSTITUCION								T O T A L				GRAN TOTAL
	UNIVERSIDADES				ESCUELAS				F	E	M	P	
	F	E	M	P	F	E	M	P					
<u>NORTE</u>													
1970	2	1	-	-	1	1	-	-	3	2	-	-	5
1975	3	-	-	-	2	4	-	2	5	4	-	2	11
1980	3	-	-	-	2	4	1	2	5	4	1	2	12
<u>NORDESTE</u>													
1970	10	-	1	2	1	10	5	30	11	10	6	32	59
1975	10	-	1	3	1	14	21	43	11	14	22	46	93
1980	10	2	1	3	2	5	28	44	12	7	29	47	95
<u>SUDESTE</u>													
1970	9	3	-	6	11	31	33	247	20	34	33	253	340
1975	9	3	-	11	12	39	57	466	21	42	57	477	597
1980	11	4	1	10	10	20	52	469	21	24	53	479	577
<u>SUR</u>													
1970	5	1	-	6	-	16	13	58	5	17	13	64	99
1975	5	2	-	7	1	20	27	91	6	22	27	98	153
1980	6	3	-	6	1	16	37	92	7	19	37	98	161
<u>CENTRO OESTE</u>													
1970	2	1	-	1	-	2	-	7	2	3	-	8	13
1975	3	1	-	1	1	2	1	14	4	3	1	15	23
1980	4	-	-	1	1	2	2	20	5	2	2	21	30
<u>BRASIL</u>													
1970	28	6	1	15	13	60	51	342	41	66	52	357	516
1975	30	6	1	22	17	79	106	616	47	85	107	638	877
1980	34	9	2	20	16	47	120	627	50	56	122	647	875

FUENTE : MEC/CEDATE

NOMENCLATURA: F : Federales ; E : Estaduales ; M : Municipales ; P : Privadas

UNIVERSIDADES POR GRUPOS DE TAMAÑO  
1980

os por ares de nos de uación	T O T A L						F E D E R A L E S					
	<u>TOTAL</u>	<u>NORTE</u>	<u>NORD.</u>	<u>SUDESTE</u>	<u>SUR</u>	<u>C. OESTE</u>	<u>TOTAL</u>	<u>NORTE</u>	<u>NORD.</u>	<u>SUDESTE</u>	<u>SUR</u>	<u>C. OEST</u>
3	7	1	1	4	1	-	4	1	-	3	-	-
5	12	-	3	2	5	2	7	-	2	2	2	1
10	21	1	5	7	5	3	12	1	3	3	2	3
15	12	1	4	5	2	-	3	1	1	-	1	-
20	9	-	3	5	1	-	5	-	3	1	1	-
de 20	4	-	-	3	1	-	3	-	1	2	-	-

TE: MEC/CEDATE

NUMERO DE ALUMNOS EN EL SISTEMA DE EDUCACION SUPERIOR DE BRASIL POR TIPO DE INSTITUCION  
1970 - 1980

U N I V E R S I D A D E S			E S C U E L A S			T O T A L		
<u>PUBLICAS</u>	<u>PARTICULARES</u>	<u>TOTAL</u>	<u>PUBLICAS</u>	<u>PARTICULARES</u>	<u>TOTAL</u>	<u>PUBLICAS</u>	<u>PARTICULARES</u>	<u>TOTAL</u>
164.651	79.562	244.213	50.426	161.495	211.921	215.077	241.057	456.134
36,1	17,4	53,5	11,1	35,4	46,5	47,1	52,9	100,0
270.000	156.000	426.000	106.000	435.000	541.000	376.000	591.000	967.000
27,9	16,1	44,0	11,0	45,0	56,0	38,9	61,1	100,0
392.000	250.000	642.000	101.000	602.000	703.000	493.000	852.000	1.345.000
29,1	18,6	47,7	7,5	44,8	52,3	36,7	63,3	100,0

/CEDATE

EVOLUCION DE LA MATRICULA POR REGION GEOGRAFICA  
1970 - 1980

<u>AÑO</u>	<u>R E G I O N</u>					
	<u>NORTE</u>	<u>NORDESTE</u>	<u>SUDESTE</u>	<u>SUR</u>	<u>CENTRO OESTE</u>	<u>BRASIL</u>
1970	8.758	59.392	294.821	74.767	18.396	456.134
%	1,9	13,0	64,7	16,4	4,0	100,0
1971	10.803	70.676	378.547	90.833	24.151	575.010
%	1,9	12,3	65,8	15,8	4,2	100,0
1972	12.791	85.784	470.705	112.566	27.470	709.316
%	1,8	12,1	66,3	15,9	3,9	100,0
1973	14.217	100.368	536.774	133.755	35.379	820.493
%	1,7	12,3	65,4	16,3	4,3	100,0
1974	17.236	113.300	573.788	150.290	42.586	897.220
%	1,9	12,6	64,0	16,8	4,7	100,0
1975	20.000	134.000	595.000	169.000	49.000	967.000
%	2,1	13,8	61,5	17,5	5,1	100,0
1976	21.118	167.071	631.945	170.447	51.891	1.042.472
%	2,0	16,0	60,6	16,4	5,0	100,0
1977	28.126	172.548	700.126	178.139	58.131	1.137.070
%	2,5	15,2	61,6	15,7	5,0	100,0
1978	28.255	200.839	760.553	211.317	66.595	1.267.559
%	2,2	15,8	60,0	16,7	5,3	100,0
1979	29.129	211.856	791.537	204.618	61.191	1.298.331
%	2,2	16,3	61,0	15,8	4,7	100,0
1980	31.000	221.000	819.000	210.000	64.000	1.345.000
%	2,3	16,4	60,9	15,6	4,8	100,0

FUENTE : MEC/CEDATE

ALUMNADO DE EDUCACIÓN SUPERIOR POR AREA DE CONOCIMIENTO  
1970 - 1980

<u>EXAC. TECNOLOGICAS</u>	<u>UNIVERSIDADES</u>	<u>%</u>	<u>ESCUELAS</u>	<u>%</u>	<u>PUBLICAS</u>	<u>%</u>	<u>PARTICULARES</u>	<u>%</u>	<u>TOTAL</u>
	114.570	54,6	95.320	45,4	99.384	47,4	110.506	52,6	209.890
	187.085	59,9	125.388	40,1	136.007	43,5	176.466	56,5	312.473
<u>CIOL. Y PROF. SALUD</u>									
	69.563	56,3	54.065	43,7	69.609	56,3	54.019	43,7	123.628
	104.262	65,6	54.708	34,4	90.507	56,9	68.463	43,1	158.970
<u>AGRARIAS</u>									
	13.854	71,2	5.594	28,8	17.257	88,7	2.191	11,3	19.448
	27.560	76,0	8.686	24,0	31.621	87,2	4.625	12,8	36.246
<u>HUMANAS</u>									
	160.529	35,4	292.935	64,6	126.447	27,9	327.017	72,1	453.464
	266.102	38,6	422.803	61,4	189.810	27,6	499.095	72,4	688.905
	26.919	36,1	47.672	63,2	27.054	36,3	47.537	63,7	74.591
	34.977	45,2	42.364	54,8	30.281	39,2	47.060	60,8	77.341
	7.122	44,0	9.057	56,0	6.454	39,9	9.725	60,1	16.179
	11.317	47,2	12.669	52,8	11.668	48,6	12.318	51,4	23.986
<u>GENERAL</u>									
	-	-	-	-	-	-	-	-	-
	-	-	410	-	184	-	226	-	410
	392.557	44,0	540.643	56,0	346.205	39,0	550.995	61,0	897.200
	631.303	48,6	667.028	51,4	490.078	37,7	808.253	62,3	1.298.331

MEC/CEDATE

EVOLUCION DE LA MATRICULA  
1970-1980  
(miles de alumnos)

<u>AÑO</u>	<u>UNIVERSIDADES</u>			<u>ESCUELAS</u>			<u>GRAN TOTAL</u>
	<u>TOTAL</u>	<u>PUBLICO</u>	<u>PRIVADO</u>	<u>TOTAL</u>	<u>PUBLICO</u>	<u>PRIVADO</u>	
1970	244.2	164.6	79.6	211.9	50.4	161.5	456.1
1971	286.0	192.2	93.8	289.0	64.3	224.7	575.0
1972	319.9	212.8	107.1	389.4	79.5	309.9	709.3
1973	356.9	231.3	125.6	463.6	89.7	373.9	820.5
1974	392.6	249.7	142.8	540.6	96.5	408.1	897.2
1975	426.0	270.0	156.0	541.0	106.0	435.0	967.0
1976	491.9	311.7	180.2	550.6	83.9	466.7	1.072.5
1977	543.2	345.8	197.4	593.9	82.7	511.2	1.137.3
1978	632.6	391.6	241.0	635.0	96.4	538.6	1.257.6
1979	631.3	390.4	240.9	667.0	99.6	567.4	1.298.3
1980	653.7	309.1	354.6	696.3	100.0	596.3	1.350.0

FUENTE: MEC/CEDATE

TASAS DE CRECIMIENTO DE LA MATRICULA  
1968-1980

<u>TIPOS DE INSTITUCIONES</u>	<u>P E R I O D O S</u>		
	<u>1968-1974</u>	<u>1974-1978</u>	<u>1978-1980</u>
UNIVERSIDADES	17,0	12,7	1,7
ESCUELAS	<u>26,2</u>	<u>5,9</u>	<u>4,7</u>
TOTAL	21,5	9,0	3,2

FUENTE: MEC/CEDATE



EVOLUCION DEL NUMERO DE PROGRAMAS  
DE GRADUACION OFRECIDOS  
1970 - 1980

<u>AÑO</u>	<u>NUMERO DE PROGRAMAS OFRECIDOS</u>	<u>CRECIMIENTO ANUAL</u>
1970	2.166	7,1
1971	2.620	21,0
1972	3.124	19,2
1973	3.216	2,9
1974	3.374	4,9
1975	3.602	6,8
1976	3.744	3,9
1977	3.753	0,2
1978	3.769	0,4
1979	3.939	4,5
1980	4.079	3,6

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FUENTE: MEC/CEDATE

EGRESADOS DE EDUCACION MEDIA, INSCRIPCIONES EN EXAMENES DE INGRESO A LA EDUCACION SUPERIOR  
Y NUMERO DE PLAZAS DE PRIMER AÑO DE ESTUDIOS  
1970-1980

EGRESADOS DE EDUCACION MEDIA (A)	(Crecimiento) %	INSCRIPCIONES 1/ (B)	(Crecimiento) %	PLAZAS OFRECIDAS (C)	(Crecimiento) %	A/C
225.913	-	328.931	-	145.000	-	1,5
246.883	9,3	400.958	21,9	202.110	39,4	1,2
296.454	20,1	416.662	3,9	223.009	10,3	1,3
329.851	11,3	530.354	27,3	282.333	26,6	1,1
349.909	6,1	614.805	15,9	309.448	9,6	1,1
368.479	5,3	781.190	27,1	348.227	12,5	1,0
435.489	18,2	945.279	21,0	382.418	9,8	1,1
458.979	5,4	1.186.181	25,5	393.560	2,9	1,1
501.061	9,2	1.250.537	5,4	401.977	2,3	1,2
547.001	9,2	1.559.094	24,7	401.979	0,0	1,3
597.000	9,1	1.750.000	12,2	409.000	1,7	1,4

1 : MEC / CEDATE

Este número se refiere al total de inscripciones en primera opción en exámenes de ingreso, o sea, puede haber doble conteo de un mismo individuo que se inscriba en más de un examen.

INSCRIPCIONES A LOS EXAMENES DE ADMISIONES Y PLAZAS OFRECIDAS POR REGIONES EN EL PRIMER AÑO  
1975 - 1979

N/	INSCRIPCIONES (I)			PLAZAS OFRECIDAS (PO)			I/PO		
	PUBLICAS	PARTICULARES	TOTAL	PUBLICAS	PARTICULARES	TOTAL	PUBLICAS	PARTICULARES	TOTAL
	18.312	2.108	20.420	4.295	1.418	5.713	4,26	1,49	3,57
	35.488	10.283	45.771	4.995	1.440	6.435	7,10	7,14	7,11
	87.156	44.759	131.915	25.259	14.941	40.200	3,45	3,00	3,28
	178.833	70.037	248.870	29.611	17.499	47.110	6,04	4,00	5,28
	187.118	284.594	471.712	46.629	183.884	230.523	4,01	1,55	2,05
	379.053	569.232	948.285	55.548	207.685	263.233	6,82	2,74	3,60
	61.334	51.227	112.561	24.950	32.213	57.163	2,46	1,59	1,97
	122.907	98.838	221.745	25.994	42.610	68.604	4,73	2,32	3,23
DESTE	23.351	21.231	44.582	5.608	9.020	14.628	4,16	2,35	3,05
	37.357	57.066	94.423	5.677	10.920	16.597	6,58	5,22	5,69
	377.271	403.919	781.190	106.741	241.486	348.227	3,53	1,67	2,24
	753.638	805.456	1.559.094	21.825	280.154	401.979	6,19	2,87	3,88

MEC/CEDATE

EVOLUCION DEL NUMERO DE EGRESADOS POR REGION Y POR AREA DE CONOCIMIENTOS  
1974 - 1979

<u>ION/ O</u>	<u>CIENCIAS EXACTAS Y TECNOLOGIA</u>	<u>CIENCIAS BIOLOG. Y PROF. SALUD</u>	<u>CIENCIAS AGRARIAS</u>	<u>CIENCIAS HUMANAS</u>	<u>LETRAS</u>	<u>ARTES</u>	<u>T O T A L</u>
	276	629	104	943	98	-	2.050
	522	888	230	2.158	103	4	3.905
<u>TE</u>	2.658	3.237	711	6.727	1.543	206	15.082
	4.682	5.029	1.270	14.621	3.283	361	29.246
<u>E</u>	18.977	14.010	1.328	57.889	10.671	1.911	104.786
	28.199	16.442	2.363	79.986	7.618	4.424	139.032
	3.559	3.048	805	11.310	3.589	339	22.650
	6.767	4.376	1.266	14.710	2.504	921	30.544
<u>OESTE</u>	890	654	52	3.432	555	27	5.610
	1.297	979	354	6.556	429	72	9.687
	26.360	21.578	3.000	80.301	16.456	2.483	150.178
	41.467	27.714	5.483	118.031	13.937	5.782	212.414

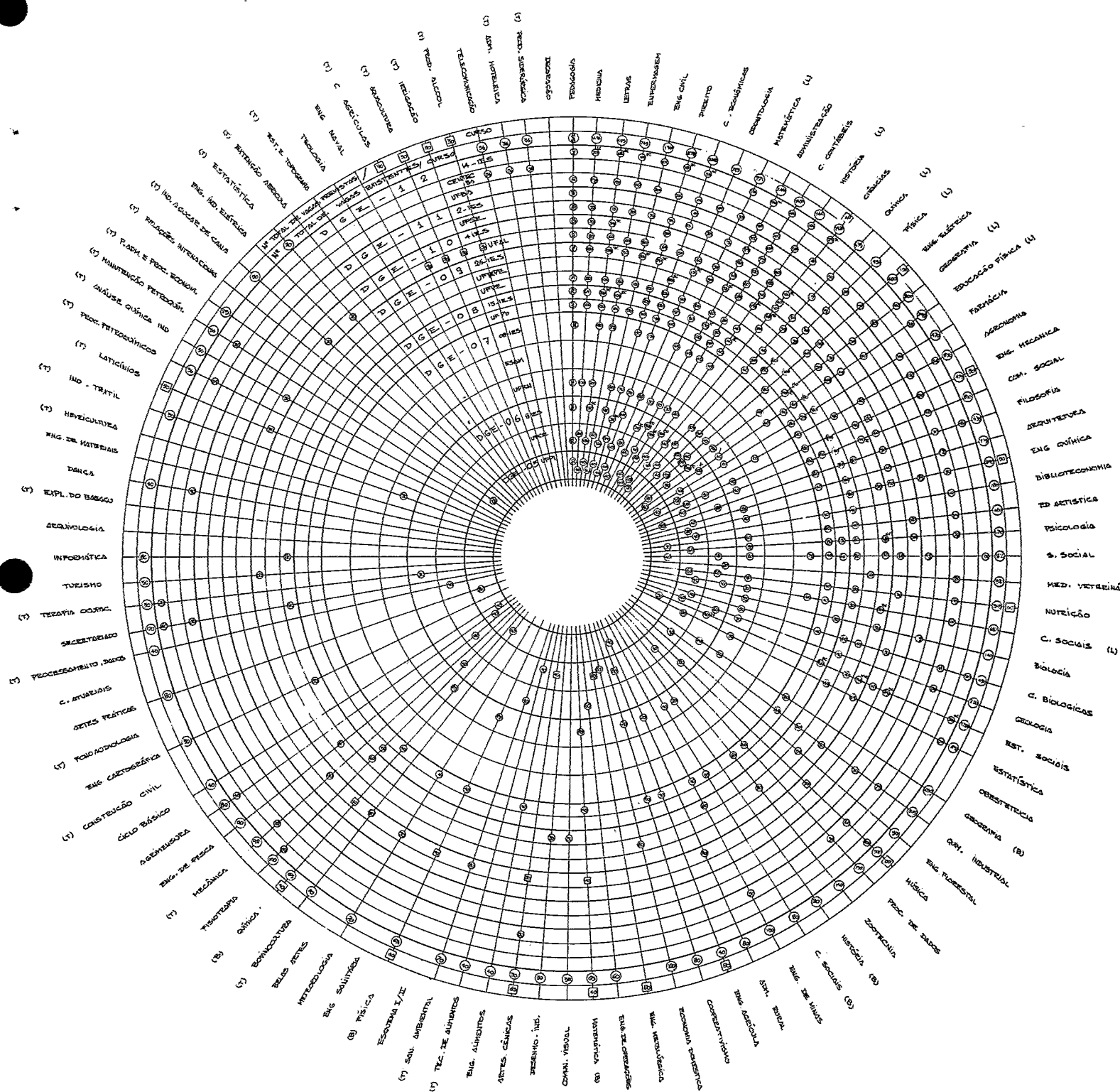
MEC/CEDATE

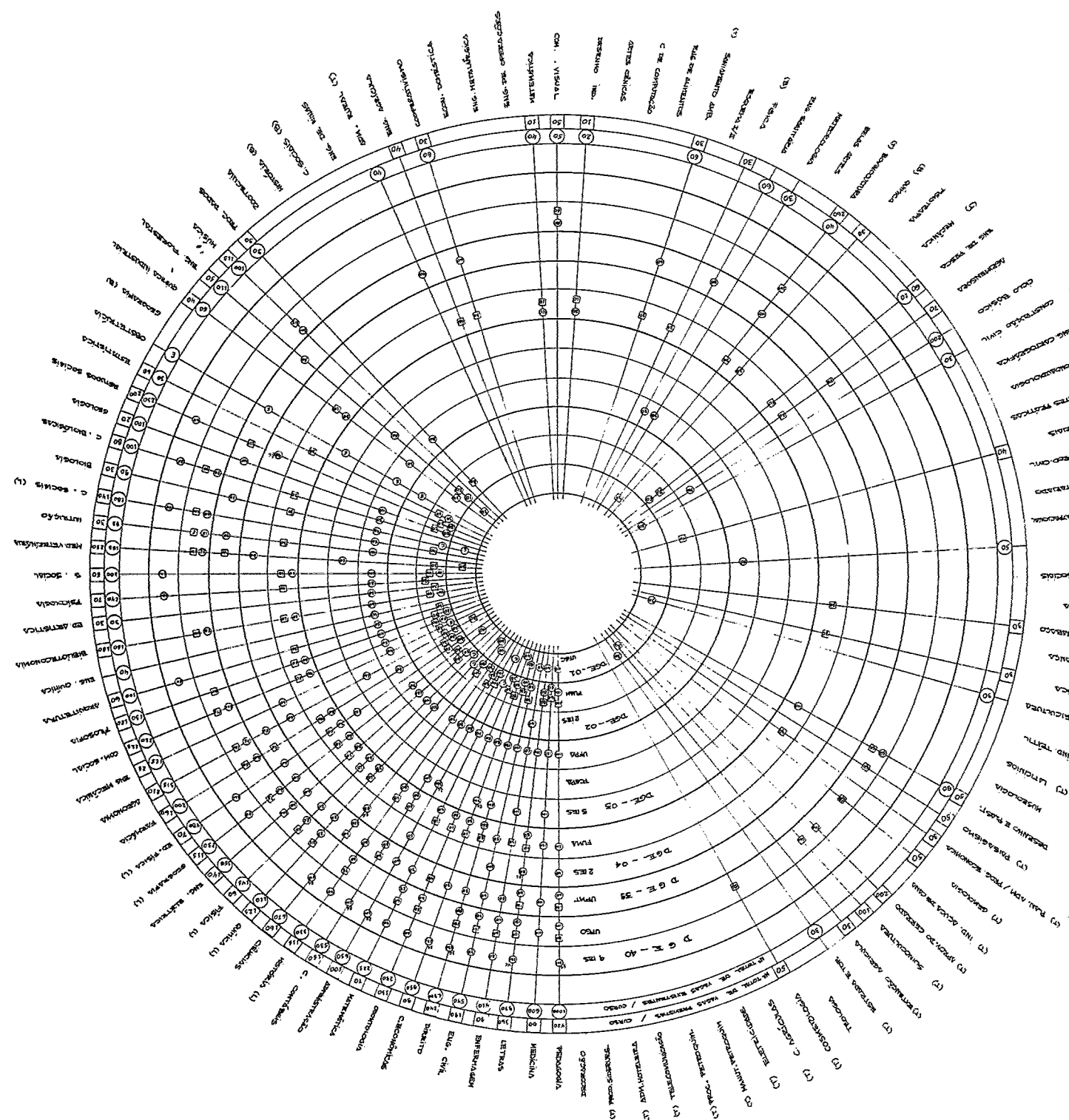
ESTUDIO GRAFICO DE PERTINENCIA REGIONAL

ESTUDIO GRAFICO DE PERTINENCIA REGIONAL

Notas Explicativas

1. Los dos gráficos presentados se refieren a las instituciones federales de educación superior en las regiones Centro-Oeste, Norte y Nordeste de Brasil en 1980.
2. Cada uno de los radios representa una carrera distinta o programa de estudios ofrecido por las instituciones de educación superior.
3. Cada una de las franjas entre circunferencias sucesivas representa a una o varias instituciones de educación superior.
4. Los números en determinada franja y radio significan el número de plazas de primer año de estudios (vagas) ofrecidas por las respectiva(s) institución(es) en el correspondiente programa de estudios.
5. La concentración de números en determinados cuadrantes de los gráficos significa que, independientemente de las zonas y regiones donde se ubican las instituciones de educación superior, éstas tienden a ofrecer los mismos programas de estudios, sin haber puesto suficiente atención a las diferentes necesidades específicas de cada zona y región.







B R A S I L

DATOS ESTADISTICOS DE LA EDUCACION INFANTIL/BASICA/MEDIA

EDUCACION INFANTIL  
EVOLUCION DE LAS MATRICULAS  
1970-1980  
(Miles de alumnos)

<u>AÑO</u>	<u>TOTAL</u>	<u>PUBLICAS</u>		<u>PRIVADAS</u>	
		<u>VOLUMEN</u>	<u>%</u>	<u>VOLUMEN</u>	<u>%</u>
1970	374.3	221.5	59,2	152.8	40,8
1971	422.2	261.1	61,4	161.1	38,6
1972	459.9	269.0	58,0	190.9	42,0
1973	498.7	278.8	56,0	219.9	44,0
1974	529.8	274.0	52,4	255.8	47,6
1975	566.0	286.5	50,5	279.5	49,5
1976	713.0	369.7	52,9	343.3	48,1
1977	861.2	433.1	50,3	428.1	49,7
1978	949.3	505.5	53,3	443.8	46,7
1979	1.198.1	653.0	54,5	545.1	45,5
1980	1.322.1	727.2	55,0	594.9	45,0

FUENTE: MEC/CEDATE

EDUCACION BASICA  
EVOLUCION DE LAS MATRICULAS  
1970-1980

<u>AÑO</u>	<u>ALUMNOS (Miles)</u>			<u>CRECIMIENTO ANUAL</u>		
	<u>TOTAL</u>	<u>URBANO</u>	<u>RURAL</u>	<u>TOTAL</u>	<u>URBANO</u>	<u>RURAL</u>
1970	15.895	11.146	4.749	-	-	-
1971	17.066	11.977	5.089	7,4	7,5	7,1
1972	18.371	12.992	5.379	7,6	8,5	5,7
1973	18.573	13.175	5.398	1,1	1,4	0,3
1974	19.287	13.848	5,439	3,8	5,1	0,8
1975	19.549	14.240	5.309	1,3	2,8	-3,0
1976	19.802	14.665	5.137	1,3	3,0	-3,3
1977	20.684	15.162	5.522	4,4	3,4	7,5
1978	21.473	15.830	5.643	3,8	4,4	2,0
1979	21.858	16.175	5.683	1,8	2,2	0,7
1980	22.523	16.760	5.763	3,0	3,6	1,4

FUENTE: MEC/CEDATE

EDUCACION MEDIA  
EVOLUCION DE LA MATRICULA  
1970-1980

<u>AÑO</u>	<u>MATRICULAS</u> <u>(Miles)</u>	<u>DEPENDENCIA ADMINISTRATIVA</u>	
		<u>PUBLICA</u> <u>%</u>	<u>PRIVADA</u> <u>%</u>
1970	1.003	54,9	45,1
1971	1.119	56,5	43,5
1972	1.300	57,3	42,7
1973	1.478	57,1	42,9
1974	1.682	56,2	43,8
1975	1.936	54,7	45,3
1976	2.213	54,4	45,6
1977	2.438	53,8	46,2
1978	2.538	53,9	46,1
1979	2.667	53,5	46,5
1980	2.812	53,2	46,8

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FUENTE: MEC/CEDATE

DISTRIBUCION DE MATRICULAS POR DEPENDENCIA ADMINISTRATIVA  
1978

DEPENDENCIA ADMINISTRATIVA	ALUMNOS (MILES)				PORCENTAJES			
	<u>INFANTIL</u>	<u>BASICA</u>	<u>MEDIA</u>	<u>SUPERIOR</u>	<u>INFANTIL</u>	<u>BASICA</u>	<u>MEDIA</u>	<u>SUPERIOR</u>
L	4.8	142.4	88.2	281.4	0,5	0,7	3,5	22,2
AL	236.1	11.593.7	1.182.1	103.9	24,9	54,0	46,9	8,2
PAL	264.6	7.053.1	79.6	60.8	27,9	32,8	3,2	4,8
ULAR	443.8	2.683.8	1.169.2	821.5	46,7	12,5	46,4	64,8
O T A L	949.3	21.473.1	2.519.1	1.267.6	100,0	100,0	100,0	100,0

: MEC/CEDATE

CEDATEMANUAIS DE INSTRUÇÕES TÉCNICAS DE PRÁTICAS LABORATORIAISDescrição do Projeto

Está sendo prevista a implantação e implementação de vários laboratórios para desenvolvimento de aulas práticas e, por isso, sua utilização por parte dos usuários (técnicos, professores e alunos) deve ser orientada.

Entende-se que a elaboração de manuais de instruções técnicas para o uso racional dos laboratórios seria de grande utilidade, já que possibilitaria um melhor manuseio dos equipamentos existentes, bem como a otimização de seu uso.

Este manual deverá conter, além das instruções de manuseio, outras que possam orientar o usuário quanto à melhor forma de conservação e guarda dos equipamentos e materiais que possam ser perecíveis com a atuação do tempo, de modo a evitar danificações por falta de conhecimento de suas especificações.

Justificativa

No momento em que a UFFL trata da construção do "Campus" universitário, volta sua atenção também para a implantação e implementação de laboratórios, considerando que a evolução técnico-científica passa a exigir dela um preparo cada vez mais apurado: compreende, então, que o seu papel como agente de mudança deve, no caso, constituir-se não apenas em transmissora de cultura e saber, mas também em propulsora do progresso científico e em criadora de pesquisa e inovação científica. Logo, a experimentação passa a ocupar mais e mais parte importante no seu trabalho, fazendo emergir dela a observação - único caminho para o alcance da análise científica dos fatos.

A implantação dos vários laboratórios no "Campus" universitário para o desenvolvimento do ensino e da pesquisa requer o estabelecimento de orientação que possibilite o uso racional dos mesmos, através da elaboração de manuais que contenham instruções técnicas de manuseio dos seus equipamentos pelos usuários (técnicos, professores e alunos).

Objetivos do ProjetoGeral

Elaborar manuais de instruções técnicas para orientar os usuários quanto ao melhor uso dos laboratórios.

Específicos

- Orientar o manuseio do instrumental que integra os diversos laboratórios, tendo em vista a sua especificidade.
- Alertar os usuários para os perigos que possam decorrer do mau uso de qualquer dos elementos que integram um laboratório, evitando, assim, explosões, depredações de máquinas e outras danificações que possam advir pela utilização e manutenção inadequada.
- Instruir os usuários no desenvolvimento de trabalhos experimentais, de modo a levá-los a melhor adequação dos conhecimentos teóricos aos práticos.
- Discriminar os serviços de manutenção preventiva para os diversos equipamentos.

Descrição

Para o alcance dos objetivos, destacamos as seguintes condições:

- a) Recursos ambientais - o departamento coloca à disposição dos consultores duas salas localizadas no bloco existente na área do Centro Tecnológico.
- b) Recursos financeiros - serão recursos provenientes do próprio projeto de Assistência Técnica para a elaboração dos manuais.
- c) Recursos humanos - basicamente serão os componentes do esquema de consultoria.
- d) Participação de outras entidades - indiretamente deverão participar do projeto, fornecendo dados técnicos e informações diversas, os fabricantes e/ou fornecedores dos equipamentos.
- e) Prazos - os serviços de elaboração dos manuais deverão se iniciar após o recebimento e instalação dos equipamentos, devendo se entender por um período da ordem de 7 meses.

Discriminação das Metas

<u>No. de Ordem</u>	<u>Descrição</u>	<u>Unidade</u>	<u>Quantidade</u>
01	Elaboração dos documentos finais	UNID	100
02	Instruções às equipes permanentes quanto ao manuseio dos equipamentos	EQUIPE	5

Especificação das Metas

01 Elaboração dos documentos finais (manuais)

Basicamente, a partir da identificação de técnicos especialistas nos diversos setores para os quais estão sendo adquiridos equipamentos (Mecânica dos Solos, Materiais de Construção, Hidráulica e Saneamento, Estradas e Transportes e Estruturas), passando por uma fase de coleta de dados, pretende-se a elaboração de Manuais de Instruções técnicas de Práticas Laboratoriais, constantes de especificações, recursos técnicos, orientações quanto ao manuseio, quanto às medidas de manutenção preventiva e outras instruções de uso dos equipamentos.

02 Instruções às equipes permanentes quanto ao manuseio dos equipamentos

Atingida a meta de elaboração dos manuais, serão desenvolvidas atividades que visem a transmitir às equipes que deverão lidar em caráter permanente com os equipamentos, instruções práticas quanto ao manuseio dos manuais e dos equipamentos em si.

FASES DO PROJETO

A. Fase de Planejamento

1. Identificação da natureza dos equipamentos
2. Designação dos especialistas em setores afins
3. Planejamento das atividades de execução e de avaliação

B. Fase de Execução

1. Instalação das equipes de trabalho
2. Identificação das finalidades dos equipamentos
3. Coleta de dados junto aos fabricantes
4. Coleta de dados junto aos setores de ensino que utilizarão os equipamentos
5. Análise dos dados coletados
6. Elaboração dos manuais
7. Instruções às equipes permanentes

C. Fase de Avaliação

1. Acompanhamento inicial do trabalho das equipes permanentes
2. Assistência eventual às equipes

DIAGRAMA DE FLUXO DE TRABALHO

A. Planejamento

A-1                      A-2                      A-3

B. Execução

B-3

B-1                      B-2                                      B-5                      B-6                      B-7

B-4

C. Avaliação

C-1                                      C-2

DESCRIÇÃO DAS TAREFAS

PLANEJAMENTO

Identificação de natureza dos equipamentos

Trata-se do primeiro contato da equipe com o problema, quando serão identificadas as características básicas dos equipamentos a serem analisados, classificando-os por grupos. Em nosso caso, por exemplo, poder-se-á criar o grupo de Materiais de Construção, Mecânica dos solos e entradas, o grupo de Hidráulica e Fenômenos de Transporte e o grupo de Estruturas.

Designação de especialistas em setores afins

Trata-se de escolha dos técnicos que deverão compor as equipes de trabalho: em função das características dos grupos definidos anteriormente, bem como de designação do técnico coordenador.

Planejamento das atividades de execução e de avaliação

Sob a orientação do técnico coordenador, serão estabelecidas as diretrizes para a consecução das fases seguintes:



## EXECUÇÃO

### Instalação das equipes de trabalho

Trata-se do início efetivo dos trabalhos, quando cada equipe deverá se instalar fisicamente e traçar os esquemas específicos de suas atividades.

### Identificação das finalidades dos equipamentos

Esta tarefa consiste na análise dos documentos de solicitação dos equipamentos, identificando-os e estabelecendo os dados que serão necessários coletar.

### Coleta de dados junto aos fabricantes

Trata-se de análise dos documentos técnicos fornecidos pelos fabricantes, e/ou pelos fornecedores dos equipamentos, bem como de eventuais técnicas aos mesmos.

### Coleta de dados junto aos setores de ensino que utilizarão os equipamentos

Nesta fase serão coletadas junto aos professores, apurando-se as condições de uso que se pretende para os equipamentos, bem como o nível de preparo das pessoas que deverão atuar em caráter permanente no manuseio dos mesmos.

### Análise dos dados coletados

Reunidas as informações disponíveis, passar-se-á a fase de análise das mesmas, definindo-se o modo de abordagem de todos os tópicos dos manuais.

### Elaboração dos manuais

Trata-se da etapa em que se deverá proceder à redação dos manuais técnicos. Este trabalho poderá ser acompanhado por testes nos equipamentos. Será também necessário o apoio de serviços gráficos.

### Instruções às equipes permanentes

Trata-se de um período de treinamento específico das diversas equipes que irão atuar em caráter permanente junto aos equipamentos, (professores e técnicos). No caso do Departamento de Engenharia, considerando-se a idéia de um técnico por turno, por laboratório e os professores das disciplinas envolvidas, este treinamento seria dado a cerca de 35 pessoas.

Este treinamento abrangeria o manuseio dos manuais e dos equipamentos.

AVALIAÇÃO

Acompanhamento inicial do trabalho das equipes permanentes

Trata-se de um curto período em que se irá observar o trabalho das diversas equipes junto aos equipamentos, corrigindo-se eventuais falhas e dirimindo-se dúvidas ainda existentes.

Assistência eventual às equipes

Trata-se da disponibilidade dos técnicos para eventuais consultas que possam ser feitas a médio prazo.

# CRONOGRAMA

FASES/TAREFAS	ESCALA DE TEMPO							
	MES 1	MES 2	MES 3	MES 4	MES 5	MES 6	MES 7	MES N
Identificação natureza equipamento	xx							
Designação especialistas		xx						
Atribuição atividades			xxx					
Organização equipes de trabalho				xx				
Identificação finalidade dos equipamentos				xx				
Coleta de dados junto fabricante				xxxxxxxx				
Coleta de dados junto setores ensino				xxxxxxxx				
Análise dados coletados					xxxxxxxx			
Elaboração dos manuais					xxxxxxxxxxxxxxxxxxxx			
Instruções às equipes permanentes						xxxxxxxx		
Acompanhamento inicial							xxxxx	
Assistência eventual								-----

PREVISÃO DOS RECURSOS

<u>Quantidade</u>	<u>Especificações</u>		
50	Consultores	Passagens	Cr\$ 802.000
		Diárias	Cr\$2.793.750
		Remuneração	<u>Cr\$6.375.000</u>
		Total	<u>Cr\$9.970.750</u> =====

APRESENTAÇÃO

Reorganização Administrativa

Partindo da estrutura existente na UFGO, o desenvolvimento do projeto deve permitir uma adaptação de todos os processos administrativos no sentido de acompanhar a dinâmica do sistema de ensino nacional, do desenvolvimento regional, e do próprio crescimento quantitativo-material desta Instituição de Ensino Superior. Tal projeto deve permitir uma avaliação do que foi a implantação da Reforma Universitária e, em consequência, traçar os programas para sua complementação e adequação ao momento conjuntural.

No que se refere aos processos administrativos:

- no Planejamento: melhorar a estrutura e a sistemática do processo já existente;
- na Organização: criar tanto a estrutura como a sistemática;
- na Direção: aperfeiçoar os elementos envolvidos no processo, no sentido de os adequar às transformações pretendidas;
- no Controle: como um acompanhamento ao Planejamento, também melhorar a estrutura e a sistemática existentes.

O trabalho deve ser conduzido ao nível de assistência técnica e de consultoria. A idéia básica é aproveitar o potencial humano existente e, fornecendo-lhe recursos materiais e orientação tecnológica, aperfeiçoá-lo no desempenho das funções administrativas e, por si mesmo, com a orientação especializada externa, desenvolver, implantar e manter o projeto proposto, assim como, assumir a iniciativa da criação e do desenvolvimento de outros projetos específicos que complementem este projeto principal que, como deve ser entendido por analogia a uma árvore, será o tronco principal cujas raízes são os recursos e as tradições da UFGO e cujos troncos secundários, galhos, folhas, flores e frutos seja o produto de toda uma ação administrativa integrada aos objetivos a que se propõe a Educação Universitária e baseada nos resultados deste projeto de REORGANIZAÇÃO ADMINISTRATIVA.

O ciclo de vida desta REORGANIZAÇÃO ADMINISTRATIVA, deverá durar aproximadamente dez anos, sendo:

- 2 anos para efetivação do Projeto (até sua implantação total):
- 7 anos para a utilização de seus resultados (incluindo as devidas manutenções e adaptações).
- 1 ano para sua decadência (período em que deverá estar sendo preparado um novo projeto).

Anteriormente deverá ser executado um projeto de Desenvolvimento de Recursos Humanos que possa dar um embasamento aos técnicos da UFGO no sentido de entenderem, se adaptarem e participarem com o maior proveito possível da transferência de conhecimentos técnicos e propiciar, ao consultor, um material humano mais qualificado, à altura de novas técnicas, de uma nova realidade que há de vir.

A exemplo de outros órgãos, também a UFGO passa por uma fase de desenvolvimento. Isto acarreta uma série de mudanças e adaptações no sentido de adequá-la às novas realidades do contexto em que está inserida.

Fatores condicionantes:

- o aumento constante da demanda no Concurso Vestibular;
- a vocação "agro-pecuária" de sua região de influência;
- a escassez de mão-de-obra qualificada para os novos desenvolvimentos tecnológicos;
- o rápido desenvolvimento urbano sem uma infra-estrutura adequada aos anseios sociais e a conseqüente carência de profissionais de base;
- o gradativo aumento da autonomia administrativa nas IES Federais.

Isto considerado, tem como conseqüência um esforço da entidade no sentido de acompanhar a evolução de seu meio: esforço este que deve partir de sua base estrutural e de seus recursos humanos e materiais e prepará-los para essa evolução do seu próprio meio.

Não faz sentido o aumento e o aprimoramento das variáveis físicas sem uma correspondência nas variáveis humanas, tecnológicas e, até, burocráticas.

Modernizar a infra-estrutura básica no desenvolvimento administrativo da Instituição e seus conseqüentes sistemas de informações administrativas, nas áreas da Administração Geral, da Administração Acadêmica, do Planejamento Universitário, do Planejamento e Administração do "Campus", da Administração Financeira e Orçamentária e do Processamento de Dados, bem como educar, desenvolver e treinar os recursos humanos envolvidos, isto tudo, como já citado na Descrição do Projeto, no sentido de acompanhar a dinâmica do sistema de ensino nacional do desenvolvimento regional, e do próprio crescimento quantitativo-material desta Instituição.

Para que este objetivo seja alcançado, o projeto deverá criar condições para que sejam elaborados programas pelo pessoal técnico da UFGO - então, um diagnóstico da situação das áreas-meio deve ser feito e, em função do diagnóstico, os programas deverão ser específicos.

Este projeto deverá determinar programas a serem desenvolvidos pelos técnicos da UFGO, com a assistência técnica externa, para:

- No processo de Planejamento: Melhorar este processo administrativo. Para isto, deverá ser ampliada a estrutura de captação de dados, desenvolvidos os sistemas de informações já existentes e criados outros necessários.
- No processo de Organização: Criar condições para que exista de fato este processo administrativo. Para efetivar este objetivo, deve ser criado um órgão com a competência de desempenhar as tarefas referentes ao desenvolvimento da estrutura organizacional e da determinação e alocação dos recursos requeridos pela Instituição.
- No processo de Direção: Aperfeiçoar este processo administrativo, criando programas que objetivem atualizar, esclarecer, desenvolver e adequar as pessoas envolvidas no processo, com o fim de que as mesmas utilizem da maneira mais eficiente possível os recursos disponíveis na Instituição, como também façam uso de recursos mais técnicos em apoio às tomadas de decisões, à emissão de ordens e instruções, à motivação e coordenação do pessoal, às comunicações internas e externas, e no aperfeiçoamento da liderança.
- No processo de Controle: Efetivar este processo administrativo aproveitando as estruturas e os sistemas desenvolvidos nos processos anteriores, sempre no sentido de complementar o de Planejamento e de provê-lo com as devidas correções para que o mesmo se mantenha dinâmico e utilizável.

Com base no Plano de Ação/Plano Diretor da UFGO para o período 1981-84, pode-se notar, através de políticas e metas explícitas, um desejo contínuo de participação no processo educacional e na integração com a comunidade. Para isso, notamos, são necessários a consecução de alguns recursos e o aprimoramento de outros.

**Recursos Ambientais:** Há uma insatisfação generalizada quanto à área física ocupada - seja pela falta ou má distribuição de espaço, seja pelo distanciamento entre as pessoas que decidem e as que executam. O sistema de comunicações e de transporte interno está, atualmente, com um desempenho insuficiente. Com a participação no projeto MEC-BID/III, o aumento do espaço físico deve proporcionar uma satisfação quando à falta de espaço e permitir um rearranjo das localizações dos diversos órgãos administrativos.

**Recursos Financeiros:** Como componente do sistema de ensino e, como órgão público federal, a instituição passa por problemas financeiros que têm preocupado aqueles que fazem planos e que tomam decisões. A idéia é, através, dos resultados do projeto, permitir-se um melhor aproveitamento deste recurso, através da otimização do uso, também, dos demais. Os recursos financeiros

desejáveis para o desenvolvimento deste projeto, parece que não deverão comprometer os orçamentos normais uma vez que, as despesas com o pessoal externo da UFGO serão cobertas pelo projeto MEC-BID/III e as despesas internas ficarão mais por conta das horas/homens dedicadas aos programas a serem desenvolvidos internamente, e que deverão encaixar-se nas tarefas diárias desses participantes, não necessitando um acréscimo de remuneração. Futuramente, quando os programas estiverem sendo implantados, outros recursos devem se fazer necessários, porém, a aquela altura, esperando estar tirando melhores resultados de nossa administração financeira, nos permitindo evoluir em função de nossa capacidade e disponibilidade.

**Recursos Humanos:** Há também, de forma generalizada, uma insatisfação quanto à quantidade e a qualidade deste recurso. No que tange à quantidade, aproximadamente, poderá ser aumentada e, assim, diminuir esta insatisfação. Com a qualidade a coisa não é tão simples assim, tanto que, por exemplo, condicionamos o início deste nosso projeto ao término de um outro de Desenvolvimento de Recursos Humanos - e para que se possa progredir constantemente, estamos também propondo, em separado, um programa de Desenvolvimento de Recursos Humanos que seja contínuo e que vise não só treinar mas, principalmente, desenvolver este recurso.

**Recursos Institucionais:** Como já citado, na própria expressão das políticas e metas propostas no Plano Diretor/Plano de Ação, notamos a preocupação em se antever a transformação e a continuação do trabalho, com frases como "...proporcionar condições de melhoria, desenvolvimento...", ou então "...assegurar o necessário suporte administrativo para o desenvolvimento de atividade-fim da Universidade...." Como esse documento teve ter a aprovação do Órgão máximo deliberativo desta Instituição, entendemos que haja o necessário suporte político para o desenvolvimento do projeto, bem como, a alocação de outras variáveis institucionais que completam este recurso.

**Participação de outras entidades.** A participação de outras instituições pode ser necessária na medida em que o projeto for se aprofundando e a necessidade de se conhecer experiências externas à UFGO seja imperiosa.

Essa participação poderá ser de várias formas como: a liberação de técnicos para nos orientar em sua especialidade (isto, supomos, por poucos dias); ou a colocação de suas instalações e documentações à disposição de nossos técnicos; ou a transferência de documentação: é o que prevemos.

**Prazos.** Esperamos implantar o projeto num tempo aproximado de dois anos. Durante esse espaço de tempo, alguns consultores deverão manter um contato constante - mais intenso em alguns momentos, em outros, eventuais consultas ou visitas de supervisão. Devemos considerar também que a partir do próximo ano (1982), teremos à testa de nossa reitoria um novo elemento que, pelo menos nos primeiros anos, deverá estar adaptando a sua filosofia de trabalho no dia-a-dia da Universidade. Nos parece propício o desenvolvimento deste projeto, integrado ao desenvolvimento de uma nova gestão.

DISCRIMINAÇÃO E ESPECIFICAÇÃO DAS METAS

1. Objetivo: Melhorar o processo administrativo de PLANEJAMENTO

1.1 Meta: Adequar a estrutura de Planejamento

1.1.1. Analisar se a atual estrutura de Planejamento (descentralizada e a um nível quase inexistente de coordenação), deve ser mantida e melhorada ou se há uma outra forma de estruturá-la.

1.1.2. Em consequência da análise, determinar programas a serem desenvolvidos pelo pessoal da UFGO para o saneamento desta deficiência.

1.2 Meta: Adequar a sistemática de captação de dados para Planejamento

1.2.1. Analisar a atual sistemática de captação, análise, processamento, guarda e divulgação de informações de base para o Planejamento.

1.2.2. Em consequência da análise, determinar quais os programas a serem desenvolvidos pelo pessoal da UFGO para melhorar a sistemática existente.

2. Objetivo: Criar condições para que exista de fato o processo administrativo de ORGANIZAÇÃO.

2.1 Meta: Criar a estrutura de Organização.

2.1.1. Analisar como os assuntos referentes à Organização têm sido tratados, uma vez que não existe nem um órgão e nem uma função própria para desempenhar as atividades inerentes a este processo.

2.1.2. Em consequência da análise, determinar que programas devem ser desenvolvidos pelo pessoal da UFGO para que a estrutura seja criada.

2.2 Meta: Criar a sistemática de Organização.

2.2.1. Como resultado da criação da estrutura de Organização, determinar quais programas devem ser desenvolvidos pelo pessoal da UFGO para a criação dos respectivos sistemas de informação para manter este processo de Organização.



3. Objetivo: Aperfeiçoar o processo administrativo de DIREÇÃO.

3.1 Meta: Adequar os procedimentos de Direção.

3.1.1. Analisar os atuais procedimentos de Direção, detectando pontos que possam ser melhorados em função das novas estruturas de Planejamento e de Organização.

3.1.2. Em consequência da análise, determinar programas a serem desenvolvidos pelo pessoal da UFGO que visem adequar os procedimentos de Direção.

4. Objetivo: Efetivar o processo administrativo de CONTROLE.

4.1 Meta: Adequar a estrutura de Controle.

4.1.1. Analisar a atual estrutura de CONTROLE, detectando pontos que devem ser melhorados em função da nova estrutura de Planejamento.

4.1.2. Em consequência da análise, determinar programas a serem desenvolvidos pelo pessoal da UFGO, que visem efetivar o processo de Controle.

4.2 Meta: Adequar a sistemática de captação de dados para Controle.

4.2.1. Analisar a atual sistemática de captação, análise, processamento, guarda e divulgação de informações de base para o Controle, considerando a nova sistemática do Planejamento.

4.2.2. Em consequência da análise, determinar quais os programas a serem desenvolvidos pelo pessoal da UFGO para melhorar a sistemática de Controle existente.

### FASES DO PROJETO

Entendemos que existam três fases para o desenvolvimento do projeto. São elas: a de Planejamento, a de Execução, e a Avaliação. Uma quarta fase não deve pertencer ao projeto - seria a de rotina.

#### 1. Fase: PLANEJAMENTO

Nesta fase estarão as tarefas que permitirão conhecer a realidade da UFGO, principalmente em suas atividades-meio, e definir os objetivos a serem atingidos através dos programas que deverão ser propostos como resultado deste projeto. Os consultores deverão trabalhar em conjunto com os técnicos e dirigentes da Universidade para o conhecimento da situação vigente e, em seguida, estudarem e proporem soluções que deverão ser aprovadas, ou não, pela alta direção da Instituição. Caso não sejam aprovadas deve, ainda, haver uma tentativa no sentido de se conseguir ou novas soluções ou redefinir outros objetivos e outras soluções.

##### Tarefas

- 1.1 Início do Projeto
- 1.2 Constituição da equipe de trabalho
- 1.3 Definição dos Objetivos
- 1.4 Estudo de viabilidade
- 1.5 Aprovação da viabilidade dos objetivos
- 1.6 (alternativa) Aprovação da redefinição dos objetivos
- 1.7 (alternativa) Fim prematuro do projeto
- 1.8 (alternativa) Redefinição dos objetivos
- 1.9 Levantamento de dados
- 1.10 Análise dos dados
- 1.11 Elaboração da proposta
- 1.12 Aprovação da proposta

#### 2. Fase: EXECUÇÃO

Nesta fase, conforme as soluções aprovadas na fase anterior, serão montados os programas que permitirão atingir os objetivos do projeto. Os programas serão o resultado deste projeto, ou seja, a Assessoria Técnica virá fazer um macro-diagnóstico da Universidade e determinar quais as possíveis soluções a serem adotadas - soluções estas que se traduzirão em programas a serem criados juntamente com as equipes de cada área (ou sistema), das atividades-meio. Estes programas, posteriormente, serão desenvolvidos com recursos internos da UFGO e, entendemos, passem a ser prática dentro da administração, em todas as áreas e a qualquer nível administrativo.

Tarefas

- 2.1 Implementação da proposta
- 2.2 Treinamento dos usuários
- 2.3 Implantação do projeto

3. Fase: AVALIAÇÃO

Nesta última fase do projeto (antes que passe para uma Fase que podemos chamar de Rotina), serão avaliados os trabalhos feitos na Tarefa de Implantação e procedidos os ajustes necessários, havendo ainda uma avaliação final após os ajustes.

Tarefas

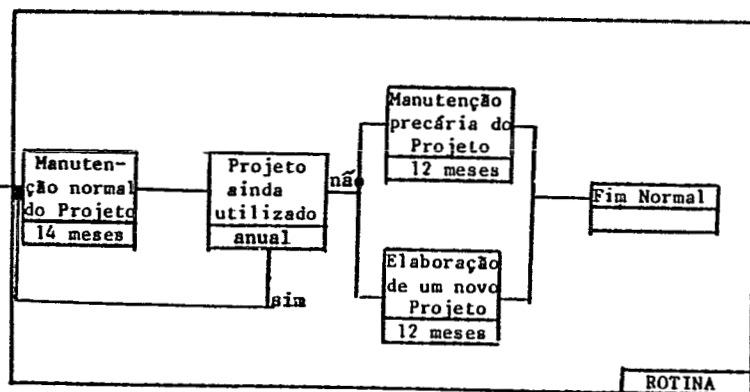
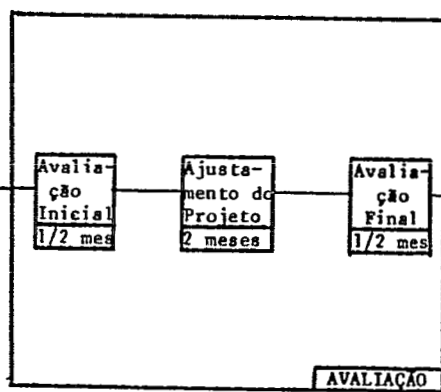
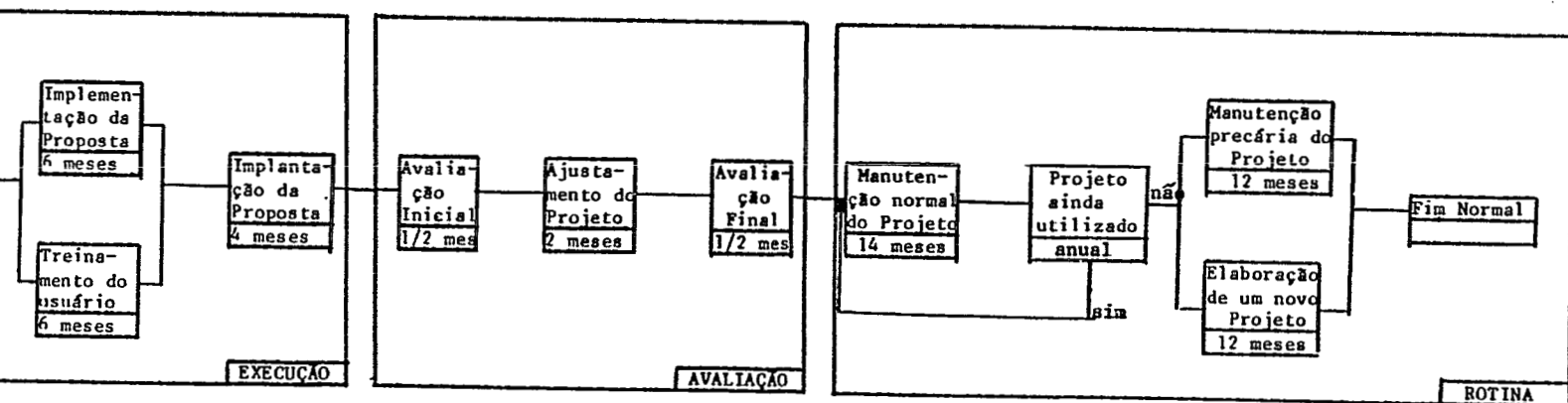
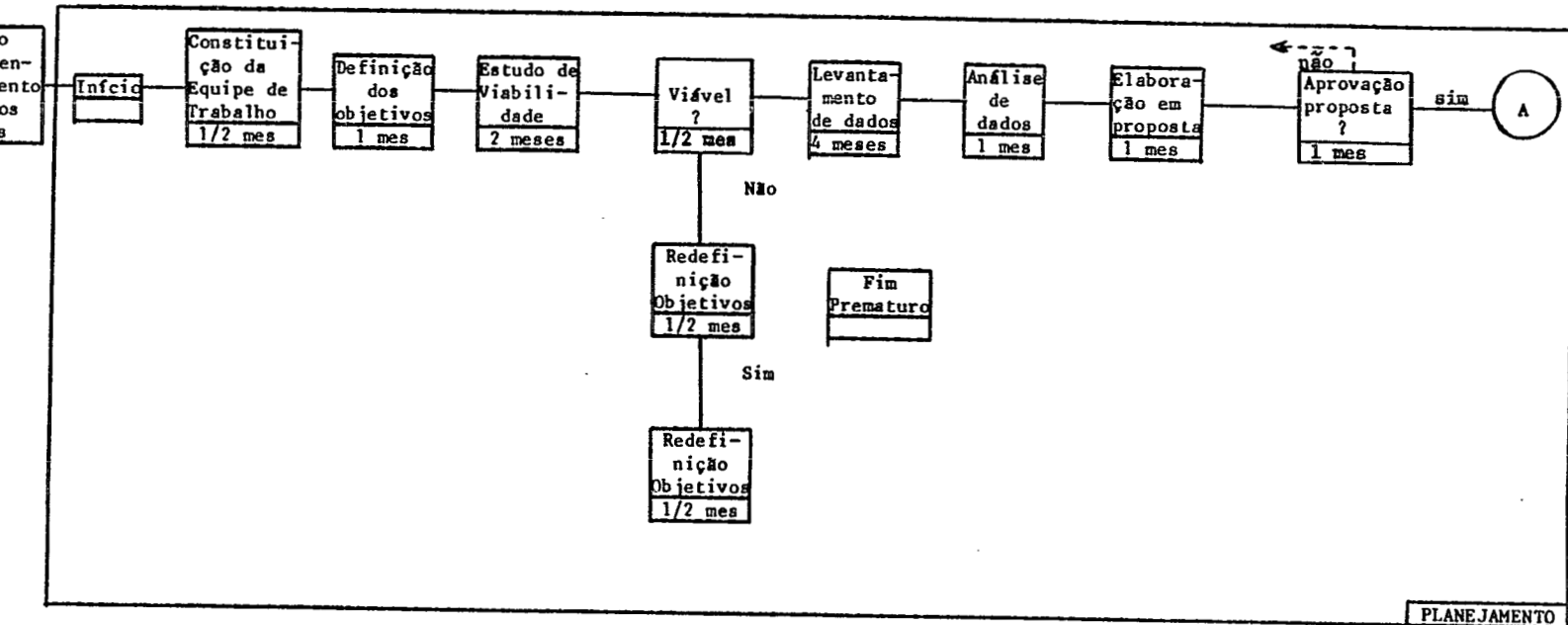
- 3.1 Avaliação inicial
- 3.2 Ajustamentos no projeto
- 3.3 Avaliação final

4. Fase: ROTINA

Nesta fase, os programas criados no projeto serão colocados em execução com avaliações periódicas por parte dos envolvidos nos programas. De momento, nesta fase, não nos parece necessária a constante presença de consultores, desde que o trabalho tenha sido bem entendido desde seu começo, tanto por parte dos consultores como dos dirigentes e técnicos da UFGO e, para isto, estamos condicionando o início desde nosso projeto ao término de um outro de Desenvolvimento de Recursos Humanos, no qual o pessoal desta Universidade possa auferir um nível de conhecimentos administrativos mais adequados às atitudes que deverão assumir como co-participantes deste projeto.

Tarefas

- 4.1 Manutenção normal do projeto
- 4.2 Avaliações periódicas
- 4.3 Manutenção precária do projeto
- 4.4 Elaboração de um novo projeto



## 1. PLANEJAMENTO

- 1.1 **Inicio do Projeto.** Esta tarefa serve como marco inicial das demais atividades do projeto. Sua data dependerá do término do projeto de Desenvolvimento de Recursos Humanos acoplado a este projeto.
- 1.2 **Constituição da equipe de trabalho.** Com a chegada dos consultores, estará efetivado de fato o início do projeto e, então, para começar, serão determinadas as pessoas da UFGO que deverão participar da equipe de apoio aos consultores.
- 1.3 **Definição dos objetivos:** A partir dos contatos com a realidade da UFGO é que os consultores e a equipe de apoio estudarão mais detalhadamente os objetivos específicos e as metas e determinarão como devem ser atingidos pelo projeto.
- 1.4 **Estudo de viabilidade.** É o levantamento de outras variáveis da conjuntura da UFGO que possam influir nos objetivos do projeto, no sentido de se determinar se os tais objetivos propostos poderão ser atingidos.
- 1.5 **Aprovação da viabilidade dos objetivos.** Uma vez bem esclarecidos, os objetivos devem ser colocados para a aprovação da alta cúpula administrativa da Instituição que os aprovará, ou não, em acordo com os objetivos maiores à que estão subordinados.
- 1.6 **(alternativa) Aprovação da redefinição dos objetivos.** Se os objetivos inicialmente propostos não forem aceitos, no todo ou em parte, poderão ser substituídos por outros, caso haja, aprovação da administração superior.
- 1.7 **(alternativa) Fim prematuro do projeto.** A não aprovação dos objetivos inicialmente propostos e a não aprovação de suas substituições, determinará um fim ao projeto, antes que se execute qualquer modificação na realidade. Obviamente tal situação é a menos esperada uma vez que, numa fase de anteprojeto, as justificativas para as mudanças foram apresentadas.
- 1.8 **(alternativa) Redefinição dos objetivos.** No caso dos objetivos inicialmente proposta serem rejeitados, porém, uma redefinição dos mesmos ser aceita, então novos objetivos devem ser definidos e passar pelas atividades: 1.4 - Estudo da viabilidade; 1.5 - Aprovação da viabilidade dos objetivos e, conforme a aprovação ou não, seguir o caminho normal do projeto.
- 1.9 **Levantamento de dados.** Com os objetivos aprovados, parte-se agora para a coleta dos dados que devem permitir conhecer mais detalhadamente a situação questionada. As metas propostas serão bem esclarecidas, quantificadas e documentadas para, na tarefa seguinte, serem analisadas.

- 1.10 Análise dos dados. Com os dados coletados e devidamente arranjados, parte-se para uma análise onde a situação diagnosticada deve ser confirmada ou ajustada. É difícil, mas não impossível, que ao trabalhar-se melhor a questão levantada, chegue-se à conclusão de que o projeto é dispensável no todo ou em parte - ou até que seus objetivos devam ser redefinidos, também no todo ou em parte - por isso não deve ser desprezada esta visão crítica no andamento dos trabalhos de análise dos dados levantados.
- 1.11 Elaboração da proposta. Com uma visão detalhada da situação, devem os consultores apresentar as opiniões com vistas a atender as necessidades encontradas. O conjunto de soluções apresentadas deve ser agrupado na forma de uma proposta. Esta proposta deverá conter uma variedade de objetivos que devam proporcionar a elaboração de programas, por parte dos técnicos da UFGO e com a assistência dos consultores.
- 1.12 Aprovação da proposta. Formalizados os programas numa proposta, esta também deve ser submetida à aprovação da alta administração da Instituição. Em caso de total aprovação, segue-se na forma natural do projeto, caso contrário, recorre-se às atividades de tarefas já concluídas corrigindo-se as deficiências da proposta que não permitiram sua aprovação total ou parcial.

## 2. EXECUÇÃO

- 2.1 Implementação da proposta. Com a proposta aprovada, parte-se para o seu detalhamento. Neste ponto, os programas propostos serão detalhados. Para o detalhamento dos programas (que deverá ser feito pelo pessoal técnico da UFGO com a assistência dos consultores), é muito importante que a atividade 2.2 - Treinamento do Usuário, esteja sendo executada em paralelo uma vez que permitirá o conhecimento e a especialização em técnicas de detalhamento de programas.
- 2.2 Treinamento dos usuários. Esta atividade deverá ocorrer ao mesmo tempo da anterior 2.1 o objetivo do treinamento é familiarizar os técnicos da UFGO numa metodologia para a elaboração de programas. O conteúdo programático poderá ser semelhante ao de curso de Organização e Métodos ou de Desenvolvimento de Projetos, ou de Desenvolvimento de Sistemas. Basicamente deverão conter técnicas de levantamento e de análise de dados, de elaboração, de aprovação e de implantação de propostas. Enquanto a teoria é vista no curso, ela é praticada na atividade de Implementação da proposta - daí um certo cuidado ser necessário para a coordenação destas duas atividades.
- 2.3 Implantação do projeto. Finalmente, nesta atividade, começaremos a obter resultados práticos do projeto. Os programas que foram detalhados na etapa 2.1 - Implementação do projeto, serão iniciados de acordo com prioridades pré-estabelecidas na etapa 1.12 - Aprovação

da proposta. É de se esperar que o ambiente da UFGO esteja preparado para receber os programas e de iniciar a produção de resultados esperados com a proposição do projeto. Parece-nos fundamental que um programa mais abrangente de Desenvolvimento de Recursos Humanos esteja com contínua e efetiva atuação, sem o que, os resultados, frisamos mais uma vez, estarão comprometidos.

### 3. AVALIAÇÃO

- 3.1 Avaliação inicial. Algum tempo depois de implantado o projeto (estamos estimando em 4 meses), deverá ocorrer uma primeira avaliação. Nesta avaliação, deverão ser detectados possíveis desvios na condução do projeto, bem como esclarecimentos adicionais também devem ser necessários. Esta primeira avaliação permitirá fornecer subsídios para a fase seguinte que ocorrerá com certeza, dado o vulto de empreendimento e o relativo noviciado do trabalho.
- 3.2 Ajustamentos do projeto. Com o resultado da Avaliação Inicial, ajustes e correções devem ocorrer no projeto ou na forma de atuar do pessoal da UFGO ou, até mesmo, no próprio ambiente (espaço físico, equipamentos, etc.) Imediatamente após os ajustes, o projeto volta ao seu curso normal.
- 3.3 Avaliação Final. Como última tarefa do projeto propriamente dito, esta avaliação deve permitir verificar como está o andamento do mesmo e quais correções ainda são necessárias para a boa continuidade da REORGANIZAÇÃO ADMINISTRATIVA. A partir deste ponto, é de se esperar, o projeto deixará de existir e passaremos a ter, na UFGO, uma rotina de REORGANIZAÇÃO ADMINISTRATIVA, com o desenvolvimento constante de programas que visem manter os processos administrativos o mais atuantes e adequados às finalidades desta Instituição de Ensino Superior.

### 4. ROTINA

- 4.1 Manutenção normal do projeto. A partir desta tarefa, a necessidade de consultoria ficará a um mínimo desejável - se possível só em eventualidades. Caso seja necessário um acompanhamento constante por parte dos consultores, através de relatórios ou de presenças rotineiras o que nos parece interessante, pelo menos durante o primeiro ano de manutenção - a forma da consultoria ficaria de ser combinada. A manutenção periódica deverá ser efetuada com o intuito de manter o resultado do projeto (os programas), útil à UFGO. Prevê-se uma evolução técnica na área administrativa, com reflexos profundamente benéficos nas áreas-fins, com a conseqüente melhoria do produto final da Universidade (ensino, pesquisa e extensão). Enquanto os resultados foram úteis, esta manutenção normal deverá existir rotineira e sistematicamente.

- 4.2 Avaliação periódica dos programas. Através da manutenção normal, os programas serão incorporados à vida administrativa da Universidade. Mesmo bem planejados e executados, entendemos ou, em função das mudanças conjunturais - naturais de uma Sociedade em evolução como a nossa - periodicamente devam ser avaliados os resultados, como também a validade dos objetivos e das metas. Como resultado destas avaliações (estimamos que sejam anuais), ou conseguiremos mais subsídios para a manutenção normal ou, então, deveremos entender que é chegado o momento de partir para um novo projeto, adequado à nova realidade.
- 4.3 Elaboração de um novo projeto. Como resultado das mudanças que deverão ocorrer interna e externamente, será necessária a criação de um novo projeto. Nossa natural expectativa é a de que o novo projeto (estimado para entrar em operação dez anos após o início do primeiro), permitirá não só adequar os processos administrativos à nova realidade interna da UFGO mas, certa e principalmente, aperfeiçoar estes processos num âmbito maior, influenciando na realidade externa. Apresentamos isto, em função de idéias que devem ser materializadas a médio prazo (cinco anos) e que possam permitir, ainda dentro do projeto inicial, programas que proporcionem a conexão de sistemas de informações, externos à UFGO, aos que já estarão sendo desenvolvidos internamente.
- 4.5 Fim normal do projeto. Com a ocorrência normal das tarefas, acreditamos que nos primeiros anos da década de 90 estaremos encerrando este primeiro projeto de REORGANIZAÇÃO ADMINISTRATIVA DA UFGO - ele estará, então, com mais de trinta anos de existência e muitos dos problemas de consolidação, como uma entidade participante do processo de transformação social, deverão estar resolvidos - outros objetivos deverão ser atingidos: até lá, o projeto atualmente proposto deve proporcionar um balisamento mais realista e consciente para o dia-a-dia de nossos administradores do que o presentemente existente.



ASES/TAREFAS  
 CUÇÃO TAREFAS

ESCALA DE TEMPO

12o. 13o. 14o. 15o. 16o. 17o. 18o. 19o. 20o. 21o.

o da proposta	XX										
	x	x	x	x	x	x					
do Usuário	XX										
	x	x	x	x	x	x	x				
da Proposta							XX				
							x	x	x		x

Tarefa normal

Participação da Assistência Técnica

FASES/TAREFAS  
EXECUÇÃO TAREFAS

	1o.	2o.	3o.	4o.	5o.	6o.	7o.	8o.	9o.	10o.
o consome tempo)										
o da Equipe de Trabalho	X									
os objetivos	X	XXXXXXX								
viabilidade		X	XXXXXXXXXXXXX	X						
le viabilidade				XXX	X					
la redefinição dos objetivos				###	XXX					
ro do projeto (não consome tempo)										
dos objetivos					###	X				
o de dados					XXXXXXXXXXXXXXXXXXXXXXXXXXXXX					
dados					X	X	X		XXXXXX	
da proposta									X	X
a proposta										XXXXXX

FASES/TAREFAS

ESCALA DE TEMPO -MÊS

ALIAÇÃO TAREFAS

	22o.	23o.	24o.
inicial	XXX	###	
do projeto	X	X	
inal			XXX
			XXX

normal

pação da Assistência Técnica

alternativa

das, atrasam o projeto nas suas respectivas durações)

PREVISÃO DE RECURSOS

- Atividades: aplicação de Treinamento e participação em Reuniões de Trabalho sobre detalhes do Projeto que merecem a profundidade e a vivência dos especialistas.
- Duração: uma semana de permanência para cada especialista ou grupo de especialistas afins.

TOTAL: Cr\$1.600.000,00

INTERNOS À U.F.G.

30 Pessoal docente e técnico-administrativo envolvido na elaboração do Projeto. Normalmente estarão a nível de D.A.S., D.A.I. e outros em cargos de chefia, supervisão, coordenação e similares.

- Atividades: visitas à outras Instituições para verificação e/ou treinamento no local de funcionamento de algum detalhe a ser considerado no Projeto.
- Duração: de um dia a duas semanas (em média, cinco dias).

TOTAL: Cr\$ 800.000,00

TOTAL GERAL: Cr\$ 3.350.000,00

ANEXO No. 5

EJEMPLO DE LISTA DE EQUIPOS

Lista de equipos para Centro de Ciencias de Salud de la  
UNIVERSIDAD FEDERAL DE CEARA

EDIFICAÇÃO: CENTRO DE CIÊNCIAS DA SAÚDE (A Construir)  
GRUPO FUNCIONAL: SALA DE CLÍNICA DE CIRURGIA BUCO-DENTÁRIA-DIAGNÓSTICO ORAL  
AMBIENTE: SALA DE CLÍNICA DE CIRURGIA BUCO-DENTÁRIA-DIAGNÓSTICO ORAL

ITEM	DENOMINAÇÃO E ESPECIFICAÇÃO	MODELO	FORNECEDOR			QUANT	SITUAÇÃO QUANTO A AQUISIÇÃO	VIDA UTIL ANOS	DATA PREVISTA DE INSTALAÇÃO	VALOR ESTIMADO Cr\$ 1.000	
			NOME	ENDEREÇO	CÓDIGO					UNITÁRIO	TOTAL
01	Equipo odontológico c/sistema automático de abastecimento de água	Gama-A	Dental Gaúcho	Rua Costa Barros, 683	RFN	16		16	10	160	2.560
02	Cadeira odontológico c/sistema eletro-mecânico	Veres-II	Dental Gaúcho	Rua Costa Barros, 683	RFN	16		16	10	215	3.440
03	Porta resíduos em aço tipo retilíneo	Basculeante	Dental Gaúcho	Rua Costa Barros, 683	RFN	16		16	10	19	304
04	Mocho odontológico c/rodízios	Delta Especial	Dental Gaúcho	Rua Costa Barros, 683	RFN	16		16	10	15	240
05	Refletor odontológico bifocal, luz fria e foco retangular	Alfa	Dental Gaúcho	Rua Costa Barros, 683	RFN	16		16	10	40	640
06	Unidade auxiliar com cuspeira de aço, 2 sugadores e siringa triplice	Gama	Dental Gaúcho	Rua Costa Barros, 683	RFN	16		16	10	58	928
07	Estufa elétrica com termo regulador e temperatura máxima até 200°C	Illidoff Cz-4	Dental Gaúcho	Rua Costa Barros, 683	RFN	02		02	10	40	80
08	Pulpe teste eletrônico	Digilog	Dental Gaúcho	Rua Costa Barros, 683	RFN	01		01	10	30	30

revisões	doc. de referência	escrit. tec. responsável	responsáveis técnicos	Estado da	Universidade	Porangabaçu
	ORDEN DE EXECUÇÃO Nº	UNIVERSIDADE FEDERAL DO CEARÁ-PR/PL	Pró-Reitoria de Planejamento	Ceará	Federal do Ceará	
		ETA-Cacitório Técnico Administrativo	Prof. Waldemar B. Teixeira-26/8/81	Curso de Odontologia		Equipamentos
		Avenida da Universidade, 2053	Prof. Faustino da A. Sobrinho	Executivo	Primeira	Técnico-Técnica
		Tel.: 223.02.50	Prof. Aníter	PROJETO EXECUTIVO DE EQUIPAMENTOS		
				LISTAGEM DE EQUIPAMENTOS POR AUSIENTE		

EDIFICAÇÃO: CENTRO DE CIÊNCIAS DA SAÚDE (A Construir).  
GRUPO FUNCIONAL: SALA DE CLÍNICA DE CIRURGIA BUCO-DENTÁRIA-DIAGNÓSTICO ORAL  
AMBIENTE: SALA DE CLÍNICA DE CIRURGIA BUCO-DENTÁRIA - DIAGNÓSTICO ORAL

ITEM	DENOMINAÇÃO E ESPECIFICAÇÃO	MODELO	FORNECEDOR			QUANT.	SITUAÇÃO QUANTO A AQUISIÇÃO QUANTIFICAÇÃO			VIDA ÚTIL (ANOS)	DATA PREVISTA DE INSTALAÇÃO	VALOR ESTIMADO	
			NOME	ENDEREÇO	CÓDIGO		Levar	em nome	de			UNITÁRIO	TOTAL
09	Cavitron	CAULK	Dental Gaúcho	Costa Barros, 683	RFM	01				01	10	130	130
10	Disturi Eletrônico	80-1.200	Dental Gaúcho	Costa Barros, 683	RFM	01				01	10	35	35
11	Compressor de Ar	W-96012 HP	RBS-Montagem Ind Ltd	Francisco Sá, 2767	RFM	01				01	10	560	560
12	Pinça Clínica para algodão	Serrilhada	Dental Gaúcho	Costa Barros, 683	RFM	30				30	10	1	30
13	Pinça Hemostática	-	Eliseu Duarte	Floriane Peixoto nº 818	RFM	05				05	10	0,5	2,5
14	Aguilha Gensaud	-	Eliseu Duarte	Floriane Peixoto nº 818	RFM	10				10	10	1,5	15
15	Explorador Bucal	Nº 03	Eliseu Duarte	Floriane Peixoto nº 818	RFM	20				20	10	0,5	10
16	Espeelho Bucal	-	Dental Gaúcho	Costa Barros, 683	RFM	30				30	3	0,5	15
17	Tesoura para Gengiva	-	Eliseu Duarte	Floriane Peixoto nº 818	RFM	5				5	10	1	5
18	Caixa Metálica Média	-	Eliseu Duarte	Floriane Peixoto nº 818	RFM	3				3	10	1,5	4,5

revisões	doc. de referência	escri. tec. responsável	responsáveis técnicos	Estado do Ceará	Universidade Federal do Ceará	Perangabaçu
Ordem de Execução nº	UNIVERSIDADE FEDERAL DO CEARÁ-PP/PL	ETA-Escritório téc. Administrativo	Pró-Reitoria de Planejamento	Curso de Odontologia	Equipamento	Teste Idêntico
Avenida da Universidade nº 2853	Tel.: 223-02.50	Prof. Faustino de A. Sobrinho	Pró-Reitor	Executiva	Primeira	Teste Idêntico
PRONTO EXECUTIVO DE EQUIPAMENTOS				LISTAGEM DE EQUIPAMENTOS POR AMBIENTE		

EDIFICAÇÃO: CENTRO DE CIÊNCIA DA SAÚDE (A Construir)  
GRUPO FUNCIONAL: SALA DE CLÍNICA DE CIRURGIA BUCO-DENTÁRIA-DIAGNÓSTICO ORAL  
AMBIENTE: SALA DE CLÍNICA DE CIRURGIA BUCO-DENTÁRIA - DIAGNÓSTICO ORAL

ITEM	DENOMINAÇÃO E ESPECIFICAÇÃO	MODELO	FORNECEDOR			QUANT.	SITUAÇÃO QUANTO A AQUISIÇÃO ORÇAMENTAR			VIG. UTIL. (ANOS)	DATA PREVISTA DE INSTALAÇÃO	VALOR ESTIMADO Cr\$ 1.000,00	
			NOME	ENDEREÇO	CÓDIGO		EMP.	ES.	PA.			UNITÁRIO	TOTAL
19	Caixa Metálica Grande	-	Eliseu Duarte	Floriane Peixoto nº 818	RFN	3				3	10	1,5	4,5
20	Bandeja 1/2 Lua	-	Eliseu Duarte	Floriane Peixoto nº 818	RFN	20				20	10	1,5	30
21	Bandeja Quadrada Grande	-	Eliseu Duarte	Floriane Peixoto nº 818	RFN	03				03	10	2,5	7,5
22	Conjunto de Póscapes/70 unidades de nºs 17, 44, 45, 150, 151, 18L e 18R	-	Eliseu Duarte	Floriane Peixoto nº 818	RFN	01				01	10	133	133
23	Conjunta de alavancos apicais para raízes nºs 300, 301 e 302	-	Eliseu Duarte	Floriane Peixoto nº 818	RFN	30				30	10	2	60
24	Síndesemotoma	-	Dental Gaúcho	Costa Barros, 683	RFN	10			10				
25	Porta Agulha Mathieu	17X63/YM	Dental Gaúcho	Costa Barros, 683	RFN	10				10	10	2	20
26	Tesoura Cirúrgica Mayo-reta	15X60	Dental Gaúcho	Costa Barros, 683	RFN	05				05	10	1,5	7,5
27	Seringa	Carpule	Dental Gaúcho	Costa Barros, 683	RFN	20				20	3	1,5	30
28	Conjunto de Cinzeis Cirúrgicos nºs 1, 2, e de 15cm 60 unidades	Stille	Dental Gaúcho	Costa Barros, 683	RFN	01				01	10	25	25

revisões	doc. de referência	escri. tec. responsável	responsáveis técnicos	Estado do Ceará	Universidade Federal do Ceará	Porangabuçu
ORDEN DE EXECUÇÃO Nº	UNIVERSIDADE FEDERAL DO CEARÁ-PR/PL	ETA-Escritório tec. Administrativo	Prof. Reitoria de Planejamento	Curso de Odontologia	Equipamento	Texto-Técnico
Avenida da Universidade, 2853	Tel.: 223.02.50	Prof. Faustino de A. Jobrinho	Pró-Reitor	Executivo	Primeira	Projeto EXECUTIVO DE EQUIPAMENTOS LISTAGEM DE EQUIPAMENTOS POR AMBIENTE

EDIFICAÇÃO: CENTRO DE CIÊNCIAS DA SAÚDE ( a construir )  
GRUPO FUNCIONAL: LABORATÓRIO DE SAÚDE MATERNO-INFANTIL  
AMBIENTE: LABORATÓRIO DE SAÚDE MATERNO - INFANTIL

ITEM	DENOMINAÇÃO E ESPECIFICAÇÃO	MODELO	FORNECEDOR			QUANT	SITUAÇÃO QUANTO A ADIÇÃO QUANTIFICADA			VIDA UTIL ANOS	DATA PREVISTA DE INSTRUÇÃO	VALOR ESTIMADO (C\$ 1.000,00)	
			NOME	ENDEREÇO	CÓDIGO		EXISTE	EM NOVO	EM LÍQUIDA			UNITÁRIO	TOTAL
13	Tambor de aço INOX medindo 16cm X 14 cm	FAMI	Eliseu Duarte	Rua Floriano Peixoto Nº 814 Fort. Ceará	RFN	01	-	01	-			1	1
14	Cuba com tampa 18 X 8 X 2,3.	FAMI	Eliseu Duarte	Rua Floriano Peixoto Nº 814 Fort. Ceará	RFN	01	-	01	-			1	1
15	Cuba redonda para assadeira	Fortinox	Eliseu Duarte	Rua Floriano Peixoto Nº 814 Fort. Ceará	RFN	03	-	03	10			0,5	1,5
16	Ramper.	ELITE	Eliseu Duarte	Rua Floriano Peixoto Nº 814 Fort. Ceará	RFN	01	-	01	10			4	4
17	Bacia INOX - 40cm	Tef. 106	Eliseu Duarte	Rua Floriano Peixoto Nº 814	RFN	01	-	01	10			2	2
18	Estetoscópio da PINARD	-	Eliseu Duarte	Rua Floriano Peixoto Nº 814 Fort. - Ceará	RFN	10	03	07	10			0,5	5,5
19	Estojo com tampa para luvas.	FAMI	Eliseu Duarte	Rua Floriano Peixoto Nº 814	RFN	01	-	01	5			3	3

**revisões**

01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

**doc. de referência**

ORDEN DE EXECUÇÃO Nº

01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

**escrit. tec. responsável**

UNIVERSIDADE FEDERAL DO CEARÁ-PR/PL

CTA- Escritório Técnico Administrativo

Avonide da Universidade

100-100-100

100-100-100

**responsáveis técnicos**

Pró-Reitoria de Planejamento

Prof. Waldemar

Telefone-05/08/81

Prof. Faustino

100-100-100

**Estado do Ceará**

Universidade Federal do Ceará

Pró-Reitoria de Planejamento

Pró-Reitoria de Planejamento

Pró-Reitoria de Planejamento

**Parangaba**

Pró-Reitoria de Planejamento

Pró-Reitoria de Planejamento

Pró-Reitoria de Planejamento

01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100



EDIFICAÇÃO: CENTRO DE CIÊNCIAS DA SAÚDE (A Construir)  
GRUPO FUNCIONAL: LABORATÓRIO DE RADIOLOGIA  
AMBIENTE: LABORATÓRIO DE RADIOLOGIA

ITEM	DENOMINAÇÃO E ESPECIFICAÇÃO	MODELO	FORNECEDOR			QUANT	SITUAÇÃO QUANTO A AQUISIÇÃO			VIA UTIL	DATA PREVISTA DE INSTALAÇÃO	VALOR ESTIMADO Cr\$ 1.000,00	
			NOME	ENDEREÇO	CÓDIGO		EM	EM	EM			UNITÁRIO	TOTAL
01	Suprte para Tele radiografia	NO STM-Mó-vel	Eliseu Duarte	Rua Floriano Peixoto, 818 - Fort-Ce.	RFN	01			01	10		48	48
02	Polvaventil	PE - 4	Eliseu Duarte	Rua Floriano Peixoto, 818 - Fort-Ce.	RFN	01			01	10		9	9
03	Chassis Radiográficos	13 X 18	Eliseu Duarte	Rua Floriano Peixoto, 818 - Fort-Ce.	RFN	02			02	10		3	6
04	Chassis Radiográficos	18 X 24	Eliseu Duarte	Rua Floriano Peixoto, 818 - Fort-Ce.	RFN	02			02	10		4	8
05	Ecrans	13 X 13	Eliseu Duarte	Rua Floriano Peixoto, 818 - Fort-Ce.	RFN	02			02	10		5	10
06	Ecrans	19 X 24	Eliseu Duarte	Rua Floriano Peixoto, 818 - Fort-Ce.	RFN	02			02	10		10	20
07	Ecrans	15 X 30	Eliseu Duarte	Rua Floriano Peixoto, 818 - Fort-Ce.	RFN	04			04	10		22	88
08	Negatoscopio	75.43.8	Eliseu Duarte	Rua Floriano Peixoto, 818 - Fort-Ce.	RFN	01			01	10		13	13
09	Aparêlho de Raio-X Heliodnt 8	Spectro 1070	Eliseu Duarte	Rua Floriano Peixoto, 818 - Fort-Ce.	RFN	02			02	10		320	640

revisões	doc. de referência	escrit. tec. responsável	responsáveis técnicos	Estado do Ceará	Universidade Federal do Ceará	Porangnibuçu	<div> <div>0.1</div> <div>0.2</div> <div>0.3</div> <div>0.4</div> <div>0.5</div> <div>0.6</div> <div>0.7</div> <div>0.8</div> <div>0.9</div> <div>1.0</div> </div>
	ORDEN DE EXECUÇÃO Nº		Pró-Reitoria de Planejamento	Curso de Odontologia	Equipamento		
		UNIVERSIDADE FEDERAL DO CEARÁ-PR/RL	Prof. Helder B. Teixeira-26/8/81	Executiva	Primeira	Técnico	
		Administrativa	Prof. Faustino de A. Sobrinho	PROJETO EXECUTIVO DE EQUIPAMENTOS			
		Av. da Universidade, 2053	Pró-Reitor	SISTEMA DE EQUIPAMENTOS POR AMBIENTE			
		Tel.: 223.02.50					



EDIFICAÇÃO: CENTRO DE CIÊNCIAS DA SAÚDE  
GRUPO FUNCIONAL: MORFOLOGIA  
AMBIENTE: SALA DE MICROSCOPIA ( 3 unidades )

ITEM	DESCRIÇÃO E ESPECIFICAÇÃO	MODELO	FORNECEDOR			QUANT.	SITUAÇÃO QUANTO A AQUISIÇÃO QUANTIFICADA			VDA UTIL ANOS	DATA PREVISTA DE INSTALAÇÃO	VALOR ESTIMADO (Cr\$ 1.00,00)	
			NOME	ENDEREÇO	CÓDIGO		EM	EM	EM			UNITÁRIO	TOTAL
01	Microscópio Binocular Olympus	CBE	IMPORTEC	Silva Paulet Nº 195, Fort- Ceará	RFN	20			20	10		153	3.060
02	Cadeira em madeira com encosto e assento anatômico, medindo 0,37 X 0,40m, pernas em garfo.	PADRÃO	Alaor Comercial LTDA	Rua: Floriano Peixoto Nº 977, Fort. - Ceará	RFN	20			20	10		2	40
03	Micro Projektor ao STARLITE.	SPENCER	Scientífica	Rua. Barão do Rio Branco Nº 1468	RFN	03			03	10		3	9
04	Microscópios monoculares	-	-	-	-	130	130		-	-		-	-
05	Cadeiras em madeira com encosto e assento anatômico, medindo 0,37m X 0,40m, pernas em garfo.	-	-	-	-	130	130		-	-		-	-
06	Projektor de Slides.	-	-	-	-	02	02		-	-		-	-
07	Aparelho de ar condicionado 18.000 BTU.	-	-	-	-	03	03		-	-		-	-

revisões	doc. de referência	escrit. tec. responsável	responsáveis técnicos	Estado da Ceg	Universidade	Porcngabuçu
	ORDEN DE EXECUÇÃO Nº	UNIVERSIDADE FEDERAL DO CEARÁ-PR/PL	Pró-Reitoria de Planejamento Prof. Helder N. Teixeira-03/09/81	FE.	Federal do Ceará	
		CTA- Escritório Técnico Administrativo.	Prof. Fau-tino			
		Av. da Universidade Nº 2053 Tel. 223.02.50	Prof. S. S. S. S.			

EDIFICAÇÃO: CENTRO DE CIÊNCIAS DA SAÚDE (a Construir)  
GRUPO FUNCIONAL: MORFOLOGIA  
AMBIENTE: LABORATÓRIO NEURO-ANATOMIA

ITEM	DENOMINAÇÃO E ESPECIFICAÇÃO	MODELO	FORNECEDOR			QUANT	SITUAÇÃO QUANTO A AQUISIÇÃO QUANTIFICAÇÃO			VIDA ÚTIL ANOS	DATA PREVISTA DE INSTALAÇÃO	VALOR ESTIMADO Cr\$ 1.000,00	
			NOME	ENDEREÇO	CÓDIGO		Em	Em	Em			UNITÁRIO	TOTAL
01	Banho Maria	Finnan	Eliseu Duarte	Flor.Peixoto, 818	RFN	01			01	5		13	13
02	Lupa estereoscópica c/equipos objm Objmpus	Zetzs	Eliseu Duarte	Flor.Peixoto, 818	RFN	01			01	10		376	376
03	Microscópio Binocular CB8	Nikon	Scientific	Br.Rio Branco, 1468	RFN	01			01	10		302	302
04	Potenciômetro B-271	Metronic	José Maria F. Lima	24 de Maio	RFN	02			02	10		140	140
05	Bico de Binsen c/tripé	Metralic	José Maria F. Lima	24 de Maio	RFN	10			10	10		2	20
06	Micrótomo p/calvidina	Spencer	Scientific	Br.Rio Branco, 1468	RFN	01			01	10		600	600
07	Microscópio c/luz polarizada	Zetzs	Scientific	Br.Rio Branco, 1468	RFN	01			01	10		1.560	1.560
08	Microscópio de campo escuro	Zetzs	Scientific	Br.Rio Branco, 1468	RFN	01			01	10		394	394
09	Microscópio de fluorescência	Zetzs	Scientific	Br.Rio Branco, 1468	RFN	01			01	10		700	700
10	Fichário de aço p/fichas de 13cm x 18cm	Confiança	Anflan	Somador Pompeu, 814	FN	02			02	10		5	10
11	Estufa	-	-	-	-	04	04			-		-	-

revisões

doc. de referência

ORDEN DE EXECUÇÃO Nº

001 002 003 004 005 006 007 008 009 010 011 012 013 014 015 016 017 018 019 020 021 022 023 024 025 026 027 028 029 030 031 032 033 034 035 036 037 038 039 040 041 042 043 044 045 046 047 048 049 050 051 052 053 054 055 056 057 058 059 060 061 062 063 064 065 066 067 068 069 070 071 072 073 074 075 076 077 078 079 080 081 082 083 084 085 086 087 088 089 090 091 092 093 094 095 096 097 098 099 100

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001 002 003 004 005 006 007 008 009 010 011 012 013 014 015 016 017 018 019 020 021 022 023 024 025 026 027 028 029 030 031 032 033 034 035 036 037 038 039 040 041 042 043 044 045 046 047 048 049 050 051 052 053 054 055 056 057 058 059 060 061 062 063 064 065 066 067 068 069 070 071 072 073 074 075 076 077 078 079 080 081 082 083 084 085 086 087 088 089 090 091 092 093 094 095 096 097 098 099 100

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001 002 003 004 005 006 007 008 009 010 011 012 013 014 015 016 017 018 019 020 021 022 023 024 025 026 027 028 029 030 031 032 033 034 035 036 037 038 039 040 041 042 043 044 045 046 047 048 049 050 051 052 053 054 055 056 057 058 059 060 061 062 063 064 065 066 067 068 069 070 071 072 073 074 075 076 077 078 079 080 081 082 083 084 085 086 087 088 089 090 091 092 093 094 095 096 097 098 099 100

001 002 003 004 005 006 007 008 009 010 011 012 013 014 015 016 017 018 019 020 021 022 023 024 025 026 027 028 029 030 031 032 033 034 035 036 037 038 039 040 041 042 043 044 045 046 047 048 049 050 051 052 053 054 055 056 057 058 059 060 061 062 063 064 065 066 067 068 069 070 071 072 073 074 075 076 077 078 079 080 081 082 083 084 085 086 087 088 089 090 091 092 093 094 095 096 097 098 099 100

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escrif. tec. responsável

responsáveis técnicos

Estado do Ceará

Universidade Federal do Ceará

Departamento de Morfologia

Executiva

Principais

Tratamento

Tratamento

Tratamento

Estado do Ceará

Universidade Federal do Ceará

Departamento de Morfologia

Executiva

Principais

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Estado do Ceará

Universidade Federal do Ceará

Departamento de Morfologia

Executiva

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Departamento de Morfologia

Executiva

Principais

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Estado do Ceará

Universidade Federal do Ceará

Departamento de Morfologia

Executiva

Principais

Tratamento

Tratamento

Tratamento

Tratamento

Tratamento

EDIFICAÇÃO: CENTRO DE CIÊNCIAS DA SAÚDE ( a construir )  
GRUPO FUNCIONAL: MORFOLOGIA  
AMBIENTE: LABORATÓRIO DE PREPARAÇÃO DE MATERIAL HISTOLÓGICO

ITEM	DENOMINAÇÃO E ESPECIFICAÇÃO	MODELO	FORNECEDOR			QUANT	SITUAÇÃO QUANTO A AQUISIÇÃO			VIDA UTIL ANOS	DATA PREVISTA DE INSTRUÇÃO	VALOR ESTIMADO ( C\$ 1.000,00 )	
			NOME	ENDEREÇO	CÓDIGO		EM	EM	EM			UNITÁRIO	TOTAL
01	Estufa 220v - 900w, temperatura 50°C com lâmpada piloto medindo 0,35m X 0,35 X 0,40m.	119	José F. Lima	Senador Pompeu Nº256- Port-Ceará	RPN	01			C1	10		30	30
02	Banho-maria	45-Tub. FENAR	Eliseu Duarte	Floriane Peixoto Nº 818- Pot-Ceará	RPN	02			02	10		14	28
03	Navalha de 120mm para micrótomo AD ( Spencer 820 )	SPENCER	Scientifica	Barão do Rio Branco Nº 1468. Fort. - Ceará	RPN	02			02	5		32	64
04	Capo para navalha para micrótomo	SPENCER	Scientifica	Barão do Rio Branco Nº 1468. Fort. - Ceará	RPN	02			02	5		4	8
05	Dorso para navalha para micrótomo	SPENCER	Scientifica	Barão do Rio Branco Nº 1468. Pot. - Ceará	RPN	02			C2	5		2	4
06	Micrótomo	-	-	-	-	02	02		-	-		-	-
07	Laminotoca	-	-	-	-	01	01		-	-		-	-

revisões	doc. de referência	escrit. loc. responsável	responsáveis técnicos	Estado do Ceará	Universidade Federal do Ceará	Forquibugu
ORDEN DE EXECUÇÃO Nº		UNIVERSIDADE FEDERAL DO CEARÁ	Pró-Reitoria de Planejamento	DEPARTAMENTO DE MORFOLOGIA	EQUIPAMENTOS	
		ETA- Escritório Técnico de Administração	Prof. Helder B. Teixeira-26/8/61	Executiva	Primeira	
		UNIVERSIDADE DO CEARÁ	Prof. Faustino de A. Moura			
		UNIVERSIDADE DO CEARÁ	Prof. Helder B. Teixeira			

EDIFICAÇÃO: CENTRO DO CIÊNCIAS DA SAÚDE-UNIVERSIDADE DEOOLIA ASSIS CHATEAUBRIAND - (REAJUSTAMENTO)  
GRUPO FUNCIONAL: SAÚDE DO UNIVERSO (GIMNASIOLOGIA - GYNECOLOGIA)  
AMBIENTE: AMBULATÓRIO DE ATENDIMENTO GINECOLÓGICO (10 Unidades)

ITEM	DENOMINAÇÃO E ESPECIFICAÇÃO	MODELO	FORNECEDOR			QUANT.	SITUAÇÃO QUANTO A AQUISIÇÃO			VIG. UTIL. (ANOS)	DATA PREVISTA DE INSTALAÇÃO	VALOR ESTIMADO Cr\$ 1.000,00	
			NOME	ENDEREÇO	CÓDIGO		EM	EM	EM			UNITÁRIO	TOTAL
01	Mesa ginecológica medindo 1,70m X 0,50m X 0,82m	-	Eliseu Duarte	R. Floriano Peixoto, 863 - Port-Ce	RPN	10			10	10		11	110
02	Colposcópio para exame ginecológico	CPM-19	Eliseu Duarte	R. Floriano Peixoto, 863 - Port-Ce	RPN	10	04		06	10		460	2.760
03	Armários de aço auxiliares medindo 1,70m alt X 0,45m larg X 0,37m - 406 fund., com moldura para vidros para instrumental e medicamentos	406	Angelo Figueiredo S.	Av. Francisco Cordeiro, 300 - Port.	RPN	10			10	10		16	180
04	Bureau com 3 gavetas medindo 0,90m comp X 0,50 larg X 0,80m alt para atendimento médico	-	Eliseu Duarte	R. Floriano Peixoto, 863 - Port-Ce	RPN	10			10	10		9	90
05	Mocho giratório	-	Eliseu Duarte	R. Floriano Peixoto, 863 - Port-Ce	RPN	10			10	10		5	50
06	Força detritos	-	Eliseu Duarte	R. Floriano Peixoto, 863 - Port-Ce	RPN	10			10	10		4	40

revisões	doc. de referência	escri. tec. responsável	responsáveis técnicos	Estado do Ceará	Universidade Federal do Ceará	Yoracambuçu	Q6	U.F.C.	C2
ORDEN DE EXECUÇÃO Nº	UNIVERSIDADE FEDERAL DO CEARÁ	Prof. Faustino de A. Sobrinho	Pró-Reitoria de Planejamento	Saúde Comunitária	Equipamento	Executiva	C.C.	C.C.	C.C.
	Ad. Administrativo	Prof. Faustino de A. Sobrinho	Pró-Reitor	Pró-Reitor	Pró-Reitor	Pró-Reitor	P.B.	P.B.	P.B.
	Av. da Universidade, 2853						0.03	0.03	0.03
	tel.: 223.02.50								

COSTO DEL PROGRAMA  
POR FUENTE DE FINANCIAMIENTO  
(US\$ miles)

UNIVERSIDAD FEDERAL DE FLUMINENSE

<u>Categorías de Inversión</u>	<u>B I D</u>			<u>BRASIL</u> <u>Moneda</u> <u>Local</u>	<u>Gran</u> <u>Total</u>	<u>%</u>
	<u>Divi-</u> <u>sas</u>	<u>Moneda</u> <u>Local</u>	<u>Total</u>			
1. <u>Ingeniería y Administración</u> 1/	-	-	-	4.200	4.200	8,8
1.1 Diseños Arq./Ingeniería	-	-	-	-	-	-
1.2 Administración/Supervisión	-	-	-	4.200	4.200	8,8
1.2.1 Central	-	-	-	1.500	1.500	3,1
1.2.2 Agentes Ejecutores	-	-	-	2.700	2.700	5,7
2. <u>Costos Directos</u> 1/	14.950	4.400	19.350	9.650	29.000	60,8
2.1 Obras e Instalaciones	13.150	3.800	16.950	4.550	21.500	45,1
2.2 Equipamento	1.800	600	2.400	5.100	7.500	15,7
3. <u>Costos Concurrentes</u>	700	-	700	5.200	5.900	12,4
3.1 Capacitación Personal	700	-	700	5.000	5.700	12,0
3.1.1 Docente en el país	-	-	-	4.400	4.400	9,2
3.1.2 Docente en el exterior	700	-	700	-	700	1,5
3.1.3 Técnico/Administrativo	-	-	-	600	600	1,3
3.2 Asistencia Técnica	-	-	-	200	200	0,4
SUBTOTAL	16.850	4.400	21.250	17.850	39.100	82,0
4. Sin Asignación Específica	1.700	400	2.100	2.700	4.800	10,0
4.1 Imprevistos	1.700	400	2.100	2.700	4.800	10,0
5. <u>Gastos Financieros</u>	400	100	500	3.300	3.800	8,0
5.1 Intereses	210	50	260	3.000	3.260	6,9
5.2 Comisión de Crédito BID a/	-	-	-	300	300	0,6
5.3 Inspección/Vigilancia	190	50	240	-	240	0,5
TOTAL	18.950	4.900	23.850	23.850	47.700	100,0
PORCENTAJE	39,7	10,3	50,0	50,0	100,0	

1/ La Comisión de Crédito del BID se pagará en divisas.

COSTO DEL PROGRAMA  
POR FUENTE DE FINANCIAMIENTO  
(US\$ miles)

UNIVERSIDAD FEDERAL DE CEARA

<u>Categorías de Inversión</u>	<u>B I D</u>			<u>BRASIL</u> <u>Moneda</u> <u>Local</u>	<u>Gran</u> <u>Total</u>	<u>%</u>
	<u>Divi-</u> <u>sas</u>	<u>Moneda</u> <u>Local</u>	<u>Total</u>			
1. <u>Ingeniería y Administración</u> 1/	-	-	-	3.500	3.500	8,9
1.1 Diseños Arq./Ingeniería	-	-	-	-	-	-
1.2 Administración/Supervisión	-	-	-	3.500	3.500	8,9
1.2.1 Central	-	-	-	1.300	1.300	3,3
1.2.2 Agentes Ejecutores	-	-	-	2.200	2.200	5,6
2. <u>Costos Directos</u> 1/	12.250	3.600	15.850	8.150	24.000	60,8
2.1 Obras e Instalaciones	10.700	3.100	13.800	3.700	17.500	44,4
2.2 Equipamento	1.550	500	2.050	4.450	6.500	16,4
3. <u>Costos Concurrentes</u>	600	-	600	4.250	4.850	12,3
3.1 Capacitación Personal	600	-	600	4.100	4.700	11,9
3.1.1 Docente en el país	-	-	-	3.600	3.600	9,1
3.1.2 Docente en el exterior	600	-	600	-	600	1,5
3.1.3 Técnico/Administrativo	-	-	-	500	500	1,3
3.2 Asistencia Técnica	-	-	-	150	150	0,4
SUBTOTAL	13.850	3.600	17.450	14.900	32.350	82,0
4. Sin Asignación Específica	1.480	320	1.800	2.200	4.000	10,1
4.1 Imprevistos	1.480	320	1.800	2.200	4.000	10,1
5. <u>Gastos Financieros</u>	300	100	400	2.700	3.100	7,9
5.1 Intereses	150	60	210	2.450	2.660	6,7
5.2 Comisión de Crédito BID a/	-	-	-	250	250	0,7
5.3 Inspección/Vigilancia	150	40	190	-	190	0,5
TOTAL	15.630	4.020	19.650	19.800	39.450	100,0
PORCENTAJE	39,6	10,2	49,8	50,2	100,0	

1/ La Comisión de Crédito del BID se pagará en divisas.



COSTO DEL PROGRAMA  
POR FUENTE DE FINANCIAMIENTO  
(US\$ miles)

UNIVERSIDAD FEDERAL DE AMAZONAS

<u>Categorías de Inversión</u>	<u>B I D</u>			<u>BRASIL</u> <u>Moneda</u> <u>Local</u>	<u>Gran</u> <u>Total</u>	<u>%</u>
	<u>Divi-</u> <u>sas</u>	<u>Moneda</u> <u>Local</u>	<u>Total</u>			
1. <u>Ingeniería y Administración</u> 1/	-	-	-	2.200	2.200	8,9
1.1 Diseños Arq./Ingeniería	-	-	-	-	-	-
1.2 Administración/Supervisión	-	-	-	2.200	2.200	8,9
1.2.1 Central	-	-	-	800	800	3,2
1.2.2 Agentes Ejecutores	-	-	-	1.400	1.400	5,7
2. <u>Costos Directos</u> 1/	8.200	2.400	10.600	4.400	15.000	60,9
2.1 Obras e Instalaciones	7.400	2.200	9.600	2.400	12.000	48,7
2.2 Equipamento	800	200	1.000	2.000	3.000	12,2
3. <u>Costos Concurrentes</u>	400	-	400	2.600	3.000	12,2
3.1 Capacitación Personal	400	-	400	2.500	2.900	11,8
3.1.1 Docente en el país	-	-	-	2.200	2.200	8,9
3.1.2 Docente en el exterior	400	-	400	-	400	1,7
3.1.3 Técnico/Administrativo	-	-	-	300	300	1,2
3.2 Asistencia Técnica	-	-	-	100	100	0,4
SUBTOTAL	9.200	2.400	11.600	8.800	20.200	82,0
4. Sin Asignación Específica	850	200	1.050	1.450	2.500	10,1
4.1 Imprevistos	850	200	1.050	1.450	2.500	10,1
5. <u>Gastos Financieros</u>	210	100	310	1.640	1.950	7,9
5.1 Intereses	110	70	180	1.490	1.670	6,8
5.2 Comisión de Crédito BID a/	-	-	-	150	150	0,6
5.3 Inspección/Vigilancia	100	30	130	-	130	0,5
TOTAL	10.260	2.700	12.960	11.690	24.650	100,0
PORCENTAJE	41,6	10,9	52,6	47,4	100,0	

1/ La Comisión de Crédito del BID se pagará en divisas.

COSTO DEL PROGRAMA  
POR FUENTE DE FINANCIAMIENTO  
(US\$ miles)

UNIVERSIDAD FEDERAL DE MARANHÃO

<u>Categorías de Inversión</u>	<u>B I D</u>			<u>BRASIL</u>	<u>Gran</u>	<u>%</u>
	<u>Divi-</u>	<u>Moneda</u>	<u>Total</u>	<u>Moneda</u>		
	<u>sas</u>	<u>Local</u>		<u>Local</u>	<u>Total</u>	
1. <u>Ingeniería y Administración</u> 1/	-	-	-	2.050	2.050	10,0
1.1 Diseños Arq./Ingeniería	-	-	-	150	150	0,7
1.2 Administración/Supervisión	-	-	-	1.900	1.900	9,3
1.2.1 Central	-	-	-	700	700	3,3
1.2.2 Agentes Ejecutores	-	-	-	1.200	1.200	6,0
2. <u>Costos Directos</u> 1/	6.350	1.600	7.950	4.050	12.000	59,6
2.1 Obras e Instalaciones	5.600	1.400	7.000	2.000	9.000	44,7
2.2 Equipamento	750	200	950	2.050	3.000	14,9
3. <u>Costos Concurrentes</u>	300	-	300	2.200	2.500	12,4
3.1 Capacitación Personal	300	-	300	2.100	2.400	11,9
3.1.1 Docente en el país	-	-	-	1.800	1.800	8,9
3.1.2 Docente en el exterior	300	-	300	-	300	1,5
3.1.3 Técnico/Administrativo	-	-	-	300	300	1,5
3.2 Asistencia Técnica	-	-	-	100	100	0,5
SUBTOTAL	7.150	1.600	8.750	7.800	16.650	82,1
4. Sin Asignación Específica	700	200	900	1.100	2.000	10,0
4.1 Imprevistos	700	200	900	1.100	2.000	10,0
5. <u>Gastos Financieros</u>	140	30	170	1.430	1.600	8,0
5.1 Intereses	60	10	70	1.280	1.350	6,9
5.2 Comisión de Crédito BID a/	-	-	-	150	150	0,8
5.3 Inspección/Vigilancia	80	20	100	-	100	0,3
TOTAL	7.990	1.830	9.820	10.330	20.150	100,0
PORCENTAJE	39,6	9,1	48,7	51,3	100,0	

1/ La Comisión de Crédito del BID se pagará en divisas.

COSTO DEL PROGRAMA  
POR FUENTE DE FINANCIAMIENTO  
(US\$ miles)

UNIVERSIDAD FEDERAL DE GOIAS

<u>Categorías de Inversión</u>	<u>B I D</u>			<u>BRASIL</u>	<u>Gran</u>	<u>%</u>
	<u>Divi-</u>	<u>Moneda</u>		<u>Moneda</u>		
	<u>sas</u>	<u>Local</u>	<u>Total</u>	<u>Local</u>	<u>Total</u>	
1. <u>Ingeniería y Administración</u> 1/	-	-	-	1.600	1.600	8,4
1.1 Diseños Arq./Ingeniería	-	-	-	-	-	-
1.2 Administración/Supervisión	-	-	-	1.600	1.600	8,4
1.2.1 Central	-	-	-	600	600	3,2
1.2.2 Agentes Ejecutores	-	-	-	1.000	1.000	5,2
2. <u>Costos Directos</u> 1/	5.700	1.800	7.500	4.000	11.500	60,7
2.1 Obras e Instalaciones	5.000	1.600	6.600	2.900	8.500	44,8
2.2 Equipamento	700	200	900	2.100	3.000	15,9
3. <u>Costos Concurrentes</u>	300	-	300	2.150	2.450	12,9
3.1 Capacitación Personal	300	-	300	2.100	2.400	12,6
3.1.1 Docente en el país	-	-	-	1.800	1.800	9,4
3.1.2 Docente en el exterior	300	-	300	-	300	1,6
3.1.3 Técnico/Administrativo	-	-	-	300	300	1,6
3.2 Asistencia Técnica	-	-	-	50	50	0,3
SUBTOTAL	6.500	1.800	8.300	7.250	15.550	82,1
4. Sin Asignación Específica	650	200	850	1.050	1.900	10,0
4.1 Imprevistos	650	200	850	1.050	1.900	10,0
5. <u>Gastos Financieros</u>	140	60	200	1.300	1.500	8,0
5.1 Intereses	60	40	100	1.150	1.250	6,9
5.2 Comisión de Crédito BID a/	-	-	-	150	150	0,7
5.3 Inspección/Vigilancia	80	20	100	-	100	0,4
TOTAL	7.290	2.060	9.350	9.600	18.950	100,0
PORCENTAJE	38,5	10,9	49,4	50,6	100,0	

1/ La Comisión de Crédito del BID se pagará en divisas.

COSTO DEL PROGRAMA  
POR FUENTE DE FINANCIAMIENTO  
(US\$ miles)

UNIVERSIDAD FEDERAL DE ALAGOAS

<u>Categorías de Inversión</u>	<u>B I D</u>			<u>BRASIL</u>		<u>%</u>
	<u>Divi- sas</u>	<u>Moneda Local</u>	<u>Total</u>	<u>Moneda Local</u>	<u>Gran Total</u>	
1. <u>Ingeniería y Administración</u> 1/	-	-	-	1.650	1.650	9,6
1.1 Diseños Arq./Ingeniería	-	-	-	150	150	1,0
1.2 Administración/Supervisión	-	-	-	1.500	1.500	8,6
1.2.1 Central	-	-	-	500	500	3,0
1.2.2 Agentes Ejecutores	-	-	-	1.000	1.000	5,6
2. <u>Costos Directos</u> 1/	5.550	1.400	6.950	3.550	10.500	61,4
2.1 Obras e Instalaciones	4.900	1.200	6.100	1.400	7.500	43,9
2.2 Equipamento	650	200	850	2.150	3.000	17,5
3. <u>Costos Concurrentes</u>	250	-	250	1.750	2.000	11,7
3.1 Capacitación Personal	250	-	250	1.750	1.950	11,4
3.1.1 Docente en el país	-	-	-	1.500	1.500	8,6
3.1.2 Docente en el exterior	250	-	250	-	250	1,5
3.1.3 Técnico/Administrativo	-	-	-	200	200	1,3
3.2 Asistencia Técnica	-	-	-	50	50	0,3
SUBTOTAL	6.200	1.400	7.600	6.550	14.150	82,7
4. Sin Asignación Específica	600	100	700	1.000	1.700	10,0
4.1 Imprevistos	600	100	700	1.000	1.700	10,0
5. <u>Gastos Financieros</u>	130	40	170	1.080	1.250	7,3
5.1 Intereses	60	25	85	980	1.065	6,3
5.2 Comisión de Crédito BID a/	-	-	-	100	100	0,6
5.3 Inspección/Vigilancia	70	15	85	-	85	0,4
TOTAL	6.930	1.540	8.470	8.630	17.100	100,0
PORCENTAJE	40,5	9,0	49,5	50,5	100,0	

1/ La Comisión de Crédito del BID se pagará en divisas.

COSTO DEL PROGRAMA  
POR FUENTE DE FINANCIAMIENTO  
(US\$ miles)

UNIVERSIDAD FEDERAL DE JUIZ DE FORA

<u>Categorías de Inversión</u>	<u>B I D</u>			<u>BRASIL</u>	<u>Gran</u>	<u>%</u>
	<u>Divi-</u>	<u>Moneda</u>		<u>Moneda</u>		
	<u>sas</u>	<u>Local</u>	<u>Total</u>	<u>Local</u>	<u>Total</u>	
1. <u>Ingeniería y Administración</u> 1/	-	-	-	1.350	1.350	10,2
1.1 Diseños Arq./Ingeniería	-	-	-	150	150	1,2
1.2 Administración/Supervisión	-	-	-	1.200	1.200	9,0
1.2.1 Central	-	-	-	400	400	3,0
1.2.2 Agentes Ejecutores	-	-	-	800	800	6,0
2. <u>Costos Directos</u> 1/	4.400	1.000	5.400	2.600	8.000	60,0
2.1 Obras e Instalaciones	3.800	800	4.600	400	5.000	37,5
2.2 Equipamento	600	200	800	2.200	3.000	22,5
3. <u>Costos Concurrentes</u>	200	-	200	1.450	1.650	12,4
3.1 Capacitación Personal	200	-	200	1.400	1.600	12,0
3.1.1 Docente en el país	-	-	-	1.200	1.200	9,0
3.1.2 Docente en el exterior	200	-	200	-	200	1,5
3.1.3 Técnico/Administrativo	-	-	-	200	200	1,5
3.2 Asistencia Técnica	-	-	-	50	50	0,4
SUBTOTAL	4.400	1.000	5.400	5.600	11.000	82,7
4. Sin Asignación Específica	450	100	550	700	1.250	9,5
4.1 Imprevistos	450	100	550	700	1.250	9,5
5. <u>Gastos Financieros</u>	120	30	150	900	1.050	7,9
5.1 Intereses	70	20	90	800	890	6,6
5.2 Comisión de Crédito BID a/	-	-	-	100	100	0,8
5.3 Inspección/Vigilancia	50	10	60	-	60	0,5
TOTAL	4.970	1.130	6.100	7.200	13.300	100,0
PORCENTAJE	37,4	8,5	45,9	54,1	100,0	

1/ La Comisión de Crédito del BID se pagará en divisas.

COSTO DEL PROGRAMA  
POR FUENTE DE FINANCIAMIENTO  
(US\$ miles)

UNIVERSIDAD FEDERAL DE MATO GROSSO

<u>Categorías de Inversión</u>	<u>B I D</u>			<u>BRASIL</u>	<u>Gran</u>	<u>%</u>
	<u>Divi-</u>	<u>Moneda</u>	<u>Total</u>	<u>Moneda</u>		
	<u>sas</u>	<u>Local</u>		<u>Local</u>	<u>Total</u>	
1. <u>Ingeniería y Administración</u> 1/	-	-	-	1.050	1.050	10,4
1.1 Diseños Arq./Ingeniería	-	-	-	150	150	1,4
1.2 Administración/Supervisión	-	-	-	900	900	9,0
1.2.1 Central	-	-	-	300	300	3,0
1.2.2 Agentes Ejecutores	-	-	-	600	600	6,0
2. <u>Costos Directos</u> 1/	3.650	850	4.500	1.500	6.000	60,0
2.1 Obras e Instalaciones	3.500	800	4.300	1.200	5.500	55,0
2.2 Equipamento	150	50	200	300	500	5,0
3. <u>Costos Concurrentes</u>	150	-	150	1.050	1.200	12,0
3.1 Capacitación Personal	150	-	150	1.000	1.150	11,5
3.1.1 Docente en el país	-	-	-	900	900	9,0
3.1.2 Docente en el exterior	150	-	150	-	150	1,5
3.1.3 Técnico/Administrativo	-	-	-	100	100	1,0
3.2 Asistencia Técnica	-	-	-	50	50	0,5
SUBTOTAL	4.100	850	4.950	3.300	8.250	82,1
4. Sin Asignación Específica	300	100	400	600	1.000	9,8
4.1 Imprevistos	300	100	400	600	1.000	9,8
5. <u>Gastos Financieros</u>	120	30	150	650	800	7,8
5.1 Intereses	75	20	95	600	695	6,7
5.2 Comisión de Crédito BID a/	-	-	-	50	50	0,5
5.3 Inspección/Vigilancia	45	10	55	-	55	0,6
TOTAL	4.520	980	5.500	4.500	10.050	100,0
PORCENTAJE	45,0	9,8	54,8	45,2	100,0	

1/ La Comisión de Crédito del BID se pagará en divisas.

COSTO DEL PROGRAMA  
POR FUENTE DE FINANCIAMIENTO  
(US\$ miles)

UNIVERSIDAD FEDERAL DE ACRE

<u>Categorías de Inversión</u>	<u>B I D</u>			<u>BRASIL</u> <u>Moneda</u> <u>Local</u>	<u>G</u> <u>T</u>	<u>1</u>	<u>%</u>
	<u>Divi-</u> <u>sas</u>	<u>Moneda</u> <u>Local</u>	<u>Total</u>				
1. <u>Ingeniería y Administración</u> 1/	-	-	-	1.000	-	000	11,6
1.1 Diseños Arq./Ingeniería	-	-	-	200	-	200	2,4
1.2 Administración/Supervisión	-	-	-	800	-	800	9,2
1.2.1 Central	-	-	-	300	-	300	3,4
1.2.2 Agentes Ejecutores	-	-	-	500	-	500	5,8
2. <u>Costos Directos</u> 1/	2.800	700	3.500	1.600	-	100	59,0
2.1 Obras e Instalaciones	2.600	600	3.200	600	-	800	44,0
2.2 Equipamento	200	100	300	1.000	-	300	15,0
3. <u>Costos Concurrentes</u>	100	-	100	950	-	050	12,2
3.1 Capacitación Personal	100	-	100	900	-	000	11,6
3.1.1 Docente en el país	-	-	-	800	-	800	9,2
3.1.2 Docente en el exterior	100	-	100	-	-	100	1,2
3.1.3 Técnico/Administrativo	-	-	-	100	-	100	1,2
3.2 Asistencia Técnica	-	-	-	50	-	50	0,6
SUBTOTAL	3.100	700	3.800	3.350	-	150	82,7
4. Sin Asignación Específica	250	100	350	450	-	800	9,0
4.1 Imprevistos	250	100	350	450	-	800	9,0
5. <u>Gastos Financieros</u>	110	40	150	550	-	700	8,2
5.1 Intereses	75	30	105	500	-	605	7,0
5.2 Comisión de Crédito BID a/	-	-	-	50	-	50	0,6
5.3 Inspección/Vigilancia	35	10	45	-	-	45	0,6
TOTAL	3.460	840	4.300	4.350	-	650	100,0
PORCENTAJE	40,0	9,7	49,7	50,3	-	1,0	

1/ La Comisión de Crédito del BID se pagará en divisas.

COSTO DEL PROGRAMA  
POR FUENTE DE FINANCIAMIENTO  
 (US\$ miles)

<u>Categorías de Inversión</u>	<u>B I D</u>			<u>BRASIL</u>	<u>Gran</u>	<u>%</u>
	<u>Divi-</u>	<u>Moneda</u>	<u>Total</u>	<u>Moneda</u>		
	<u>sas</u>	<u>Local</u>		<u>Local</u>	<u>Total</u>	
1. <u>Ingeniería y Administración</u> 1/	-	-	-	18.600	18.600	9,3
1.1 Diseños Arq./Ingeniería	-	-	-	800	800	0,4
1.2 Administración/Supervisión	-	-	-	17.800	17.800	8,9
1.2.1 Central	-	-	-	6.200	6.200	3,1
1.2.2 Agentes Ejecutores	-	-	-	11.000	11.000	0,5
1.2.3 Escalamiento Costos	-	-	-	600	600	0,3
2. <u>Costos Directos</u> 1/	70.700	19.600	90.300	50.750	141.050	70,5
2.1 Obras e Instalaciones	47.100	12.900	60.000	18.400	78.400	39,2
2.2 Equipamento	8.420	2.550	10.970	24.600	35.570	17,8
2.3 Escalamiento de Costos	15.180	4.150	19.330	7.750	27.080	13,5
3. <u>Costos Concurrentes</u>	3.000	-	3.000	20.800	24.600	12,3
3.1 Capacitación Personal	3.000	-	3.000	20.800	23.800	11,9
3.1.1 Docente en el país	-	-	-	18.150	18.150	9,1
3.1.2 Docente en el exterior	2.900	-	2.900	-	2.900	1,5
3.1.3 Técnico/Administrativo	-	-	-	2.250	2.250	1,2
3.1.4 Escalamiento de Costos	100	-	100	100	200	0,1
4. <u>Gastos Financieros</u>	1.050	400	1.450	14.300	15.750	7,9
5.1 Intereses	500	200	700	13.000	13.700	6,8
5.2 Comisión de Crédito BID a/	-	-	-	1.300	1.300	0,7
5.3 Inspección/Vigilancia	550	200	750	-	750	0,4
TOTAL	75.000	20.000	95.000	105.000	200.000	100,0
PORCENTAJE	37,5	10,0	47,5	52,5	100,0	

1/ La Comisión de Crédito del BID se pagará en divisas.



ESCALAMIENTO DE COSTOS LOCALES EN US\$

El componente de costos locales del Programa es la suma, en términos nominales, de todos los gastos en moneda local a través de la ejecución del Programa. Para efectos oficiales, este costo se expresa en US\$. El factor de escalamiento depende pues, de la tasa de cambio proyectada y la tasa doméstica de inflación.

Asumiendo un período de ejecución del Programa de 4 años, el componente de los costos locales puede ser calculado de la siguiente manera:

$$C_0 \frac{P_0}{r_0} + C \frac{P_1}{r_1} + C \frac{P_2}{r_2} + C \frac{P_3}{r_3}$$

donde: C se refiere a gastos estimados para cada año (0,1,2,3), calculados con los precios del año 0 en moneda local.

p es el índice relevante del precio, donde  $p_0$  se igual a uno.

r es la tasa de cambio, en moneda local por US\$ para cada año.

El factor de escalamiento es, por lo tanto, el cociente del índice del precio (p) y la tasa de cambio oficial (r) para cada año.

Para el año cero, el factor de escalamiento es igual a:  $1/r_0$  ( $r_0$  es la actual tasa de cambio oficial: 193.67Cr/US\$, o sea:

$$1/r_0 = 0.005163 \text{ US\$/Cr}$$

Durante los últimos 32 meses este factor de la tasa de cambio ha fluctuado entre 0.003625 y 0.005339, sin una clara tendencia en 1981 y 1982. Como se indica en la Figura 1 y en la Tabla 1, el factor de escalamiento ha fluctuado entre 0.005095 en enero de 1981 a 0.004587 en noviembre del mismo año, habiendo alcanzado un máximo de 0.005339 en junio de 1982. Su nivel presente es de 0.005163 (agosto/1982).

Las proyecciones de este factor dependen del comportamiento esperado del índice del precio doméstico y la tasa oficial de cambio. Mientras que se proyecta que la inflación doméstica decrecerá ligeramente, desde casi 100% por año, el cruzeiro se espera continuará devaluándose por lo menos en el mismo ritmo, ya que, actualmente, se considera sustancialmente sobrevaluado. El US\$ en el mercado paralelo se cotiza a más de un 50% sobre el precio oficial.

El factor de escalamiento recomendado se ha calculado como el cociente promedio del índice del precio de la construcción civil (agosto 1982=100) a la tasa de cambio oficial de los últimos 20 meses. Este cociente promedio es 0.004969 y deberá de utilizarse para el año 1983.

Para los años subsiguientes se puede asumir que dicho factor aumentaría un 3% por año, de manera de reflejar el impacto del crecimiento real de los salarios en el sector de la construcción. Este incremento es la diferencia entre los promedios de 1981 y 1982, 0.004912 y 0.005054, respectivamente.

En resumen, los factores de escalamiento son:

1983	:	0.004969
1984	:	0.005113
1985	:	0.005266
1986	:	0.005424

Es importante hacer notar que estos factores convierten la moneda local a US\$.

TABLA 1

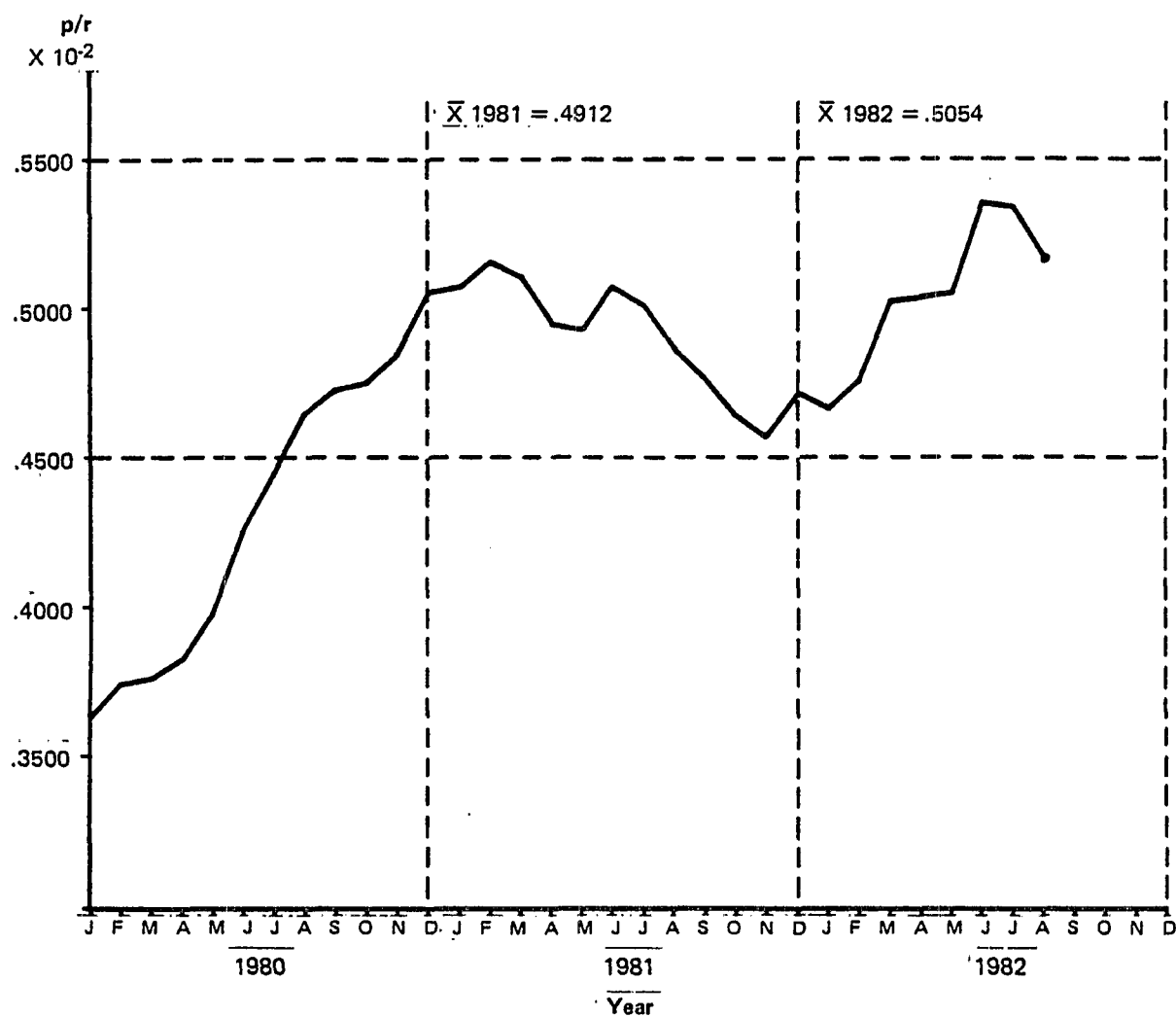
Brasil. Índice de precios de construcción civil,  
Tasa oficial de cambio y Factor de es-  
calamamiento de costos.

	<u>Índice de precios</u> <u>de construcción</u> <u>civil (Ago.82=100)</u>	<u>Tasa Oficial</u> <u>de</u> <u>Cambio (r) 1/</u>	<u>p/r</u>
<u>1980</u>			
Enero	0.15800	43.583	0.3625
Febrero	0.16772	44.820	0.3742
Marzo	0.17573	46.512	0.3778
Abril	0.18386	48.173	0.3817
Mayo	0.19850	49.750	0.3990
Junio	0.21898	51.333	0.4266
Julio	0.23517	52.835	0.4451
Agosto	0.25473	54.645	0.4661
Octubre	0.26692	56.640	0.4712
Septiembre	0.27893	58.732	0.4749
Noviembre	0.29695	61.321	0.4842
Diciembre	0.32458	64.038	0.5068
<u>1981</u>			
Enero	0.34323	67.364	0.5095
Febrero	0.36382	70.416	0.5167
Marzo	0.37830	74.088	0.5106
Abril	0.39157	79.064	0.4952
Mayo	0.41273	83.667	0.4933
Junio	0.45089	88.757	0.5080
Julio	0.47034	93.774	0.5016
Agosto	0.48567	00.758	0.4868
Septiembre	0.50300	105.150	0.4784
Octubre	0.51719	111.350	0.4645
Noviembre	0.54013	117.750	0.4587
Diciembre	0.59007	125.040	0.4719
<u>1982</u>			
Enero	0.61347	131.000	0.4683
Febrero	0.66020	137.860	0.4789
Marzo	0.72902	145.030	0.5026
Abril	0.76494	151.910	0.5035
Mayo	0.80813	159.830	0.5056
Junio	0.89846	168.140	0.5343
Julio	0.94783	177.540	0.5339
Agosto	1.00000	193.670	0.5163

1/ Promedio Mensual

FIGURA 1

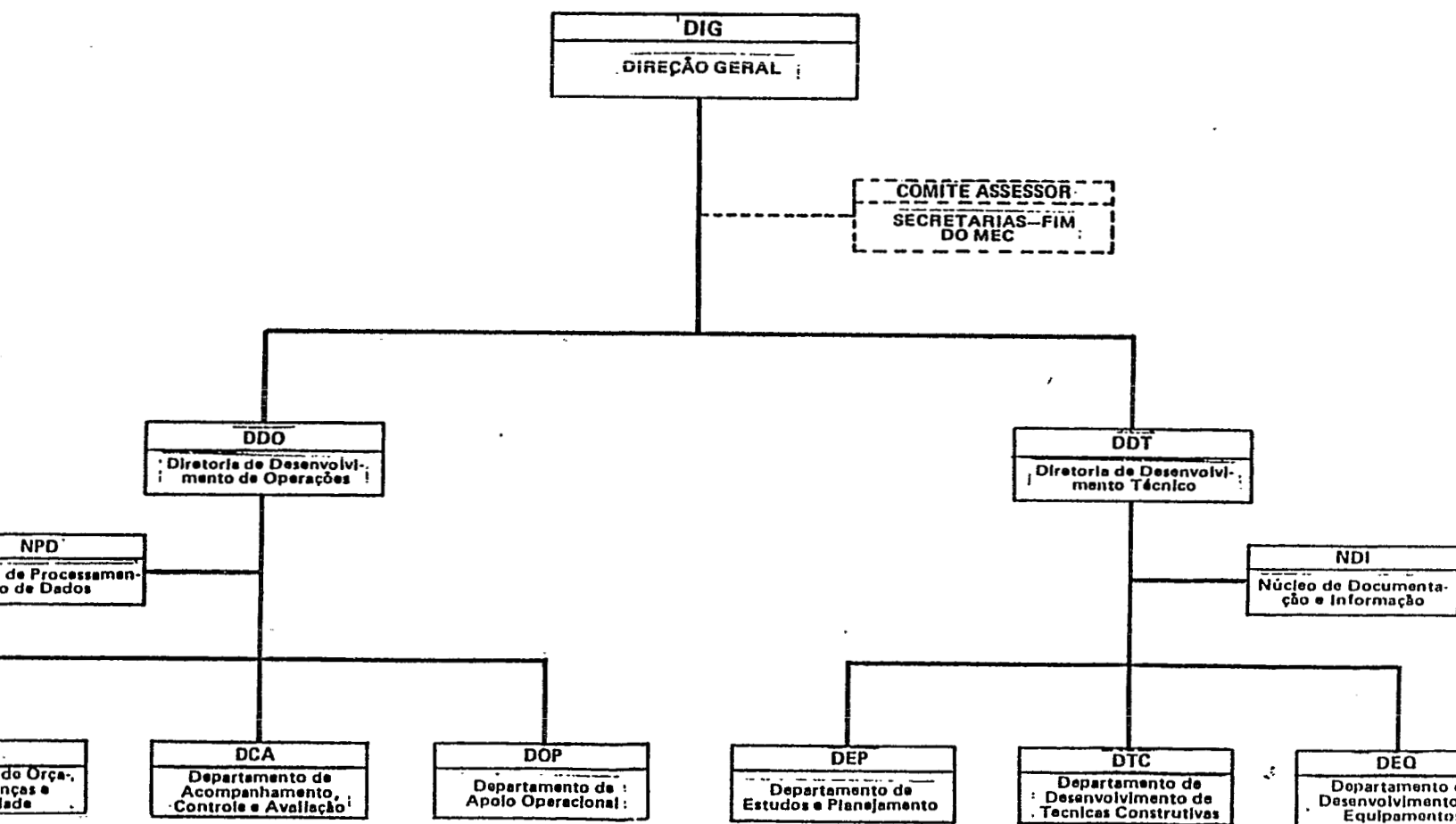
ESCALATION FACTOR (p/r):  
 RATIO OF PRICE INDEX FOR CIVIL CONSTRUCTION (AUG. 1982 = 100)  
 TO OFFICIAL EXCHANGE RATE



SOURCE: IDB, Project Analysis Department.  
 Calculations from data published in Conjuntura Economica (July 1982) and Suma Economica (Aug. 1982).

[illegible]

**CEDATE – CENTRO DE DESENVOLVIMENTO E APOIO TÉCNICO A EDUCAÇÃO**

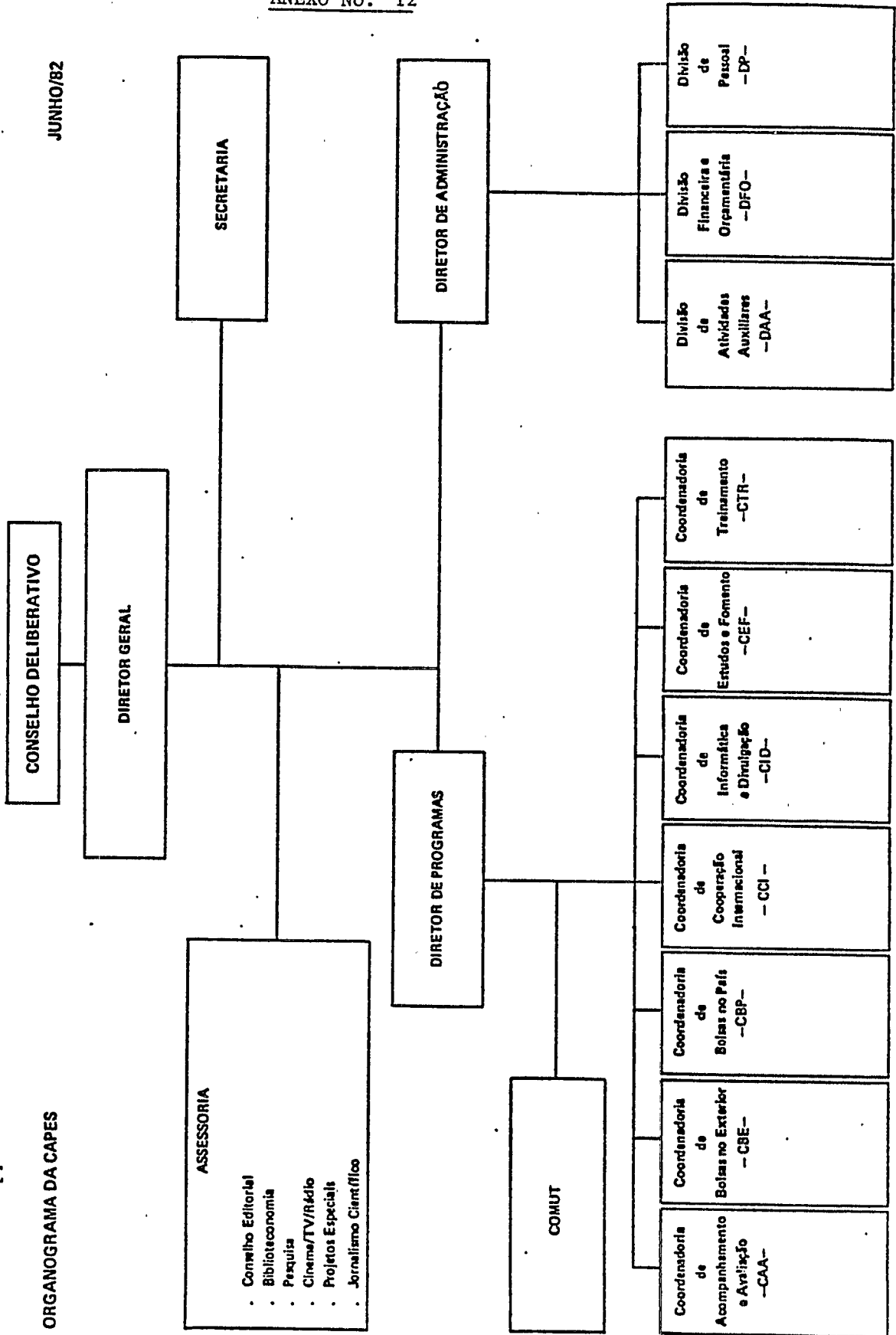


## CEDATE

## Clasificación de Personal

	<u>Profesional</u>		<u>De Apoyo</u>		<u>Total</u>	
	<u>No.</u>	<u>%</u>	<u>No.</u>	<u>%</u>	<u>No.</u>	<u>%</u>
Dirección General	<u>1</u>	1	<u>3</u>	7	<u>4</u>	4
Comité Asesor	<u>5</u>	7			<u>5</u>	4
Direc. Desarrollo Operaciones	8		1		9	
Dpto. Presupuesto, Finanzas y Contabilidad	8		6		14	
Dpto. Acompañamiento, Con- trol y Evaluación	4		1		5	
Dpto. Apoyo Operacional	<u>4</u>		<u>19</u>		<u>23</u>	
	<u>24</u>	34	<u>27</u>	60	<u>51</u>	44
Dirección Desarrollo Técnico	5		2		7	
Dpto. Desarrollo Técnicas Constructivas	15		2		17	
Dpto. Desarrollo de Equipa- miento	7		2		9	
Dpto. Estudios y Planeamiento	<u>14</u>		<u>9</u>		<u>23</u>	
	<u>41</u>	<u>58</u>	<u>15</u>	<u>33</u>	<u>56</u>	<u>48</u>
Total	<u>71</u>	<u>100</u>	<u>45</u>	<u>100</u>	<u>116</u>	<u>100</u>
%	<u>61</u>		<u>39</u>		<u>100</u>	

JUNHO/82





## C A P E S

## Clasificación de Personal

	<u>Profesional</u>		<u>Nivel Medio e Inferior</u>		<u>Total</u>	
	<u>No.</u>	<u>%</u>	<u>No.</u>	<u>%</u>	<u>No.</u>	<u>%</u>
Dirección General y Asesoría	<u>11</u>	11	<u>5</u>	5	<u>16</u>	8
Dirección Programas	4		3		7	
Coord. Acompañam. y Evaluación	7				7	
Coord. Becas Exterior	13		7		20	
Coord. Becas Pais	5		3		8	
Coord. Cooperación Internacional	10		1		11	
Coord. Informática y Divulgación	23		23		46	
Coord. Estudios y Fomento	5		2		7	
Coord. Entrenamiento	<u>3</u>		<u>—</u>		<u>3</u>	
	<u>70</u>	70	<u>39</u>	37	<u>109</u>	53
Dirección Administración	1		2		3	
Div. Actividades Auxiliares	5		34		39	
Div. Financiera y Presupuestaria	6		17		23	
Div. Personal	<u>7</u>		<u>7</u>		<u>14</u>	
	<u>19</u>	<u>19</u>	<u>60</u>	<u>58</u>	<u>79</u>	<u>39</u>
Total	<u>100</u>	<u>100</u>	<u>104</u>	<u>100</u>	<u>204</u>	<u>100</u>
%	<u>49</u>		<u>51</u>		<u>100</u>	

C E D A T E

Unidad Central de Coordinación  
Personal

- Coordinadora
  - (1) Administrador Senior
  - (1) Economista Senior
  - (2) Agentes Administrativos
- Acompañamiento y Control
  - (1) Administrador Senior
  - (1) Técnico en Educación Senior
  - (1) Economista Junior
  - (1) Estadístico
  - (1) Agente Administrativo
- Sistema de Documentación
  - (1) Administrador Senior
  - (1) Administrador Junior
  - (1) Agente Administrativo
- Proyectos y Obras
  - (4) Arquitectos Senior
  - (5) Ingenieros Senior
  - (2) Ingenieros Junior
  - (1) Agente Administrativo
- Equipamientos
  - (2) Ingenieros Senior
  - (3) Ingenieros Junior
  - (1) Agente Administrativo
- Presupuesto, Finanzas y Contabilidad
  - (2) Administradores Senior
  - (2) Administradores Junior
  - (2) Contadores Senior
  - (1) Agente Administrativo
- Administración e Importación
  - (2) Administradores Senior
  - (2) Administradores Junior
  - (1) Abogado
  - (1) Agente Administrativo

Universidades

Unidad Ejecutora Básica

Personal

- Administración del Proyecto
  - (1) Administrador Senior
  - (1) Administrador Junior
  - (1) Agente Administrativo
- Gerencia de Obras
  - (1) Arquitecto
  - (1) Ingeniero Senior
  - (2) Ingeniero Junior
  - (1) Dibujante
  - (1) Agente Administrativo
- Gerencia de Equipamientos
  - (1) Ingeniero Senior
  - (1) Ingeniero Junior
  - (1) Agente Administrativo
- Gerencia de Asistencia Técnica y Capacitación de Personal
  - (1) Educador Senior
  - (1) Educador Junior
  - (1) Agente Administrativo
- Gerencia de Licitaciones, Compras y Administración
  - (1) Administrador Senior
  - (1) Contador Junior
  - (1) Agente Administrativo

CALENDARIO DE INVERSIONES POR UNIVERSIDAD  
 (US\$ miles)

UNIVERSIDAD FEDERAL DE FLUMINENSE

<u>Categorías de Inversión</u>	<u>I AÑO</u>	<u>II AÑO</u>	<u>III AÑO</u>	<u>IV AÑO</u>	<u>TOTAL</u>	<u>%</u>
1. <u>Ingeniería y Administración</u>	1.290	970	970	970	4.200	8,8
1.1 Diseños	-	-	-	-	-	-
1.2 Administración y Superv.	1.290	970	970	970	4.200	8,8
1.2.1 Central	375	370	370	370	1.500	3,1
1.2.2 Agentes	915	600	600	600	2.700	5,7
2. <u>Costos Directos</u>	6.680	9.080	7.840	5.400	29.000	60,8
2.1 Obras e Instalaciones	5.000	7.600	5.800	3.100	21.500	45,1
2.2 Equipos	1.680	1.480	2.040	2.300	7.500	15,7
3. <u>Costos Concurrentes</u>	1.390	1.595	1.700	1.215	5.900	12,4
3.1 Capacitación Personal	1.340	1.545	1.650	1.165	5.700	12,0
3.1.1 Docente en País	1.090	1.095	1.300	915	4.400	9,2
3.1.2 Docente en exterior	100	250	250	100	700	1,5
3.1.3 Técnico Administrativo	150	200	100	150	600	1,3
3.2 Asistencia Técnica	50	50	50	50	200	0,4
4. <u>Sin Asignación Específica</u>	180	1.715	1.410	1.495	4.800	10,0
4.1 Imprevistos	180	1.715	1.410	1.495	4.800	10,0
5. <u>Gastos Financieros</u>	300	695	1.405	1.400	3.800	8,0
5.1 Intereses	110	565	1.285	1.360	3.320	7,0
5.2 Comisión Crédito BID <u>a/</u>	140	80	70	10	300	0,6
5.3 Inspección/Vigilancia	50	50	50	30	180	0,4
<b>T O T A L</b>	<b>9.840</b>	<b>14.055</b>	<b>13.325</b>	<b>10.480</b>	<b>47.700</b>	<b>100,0</b>
<b>PORCENTAJE</b>	<b>21,0</b>	<b>29,0</b>	<b>28,0</b>	<b>22,0</b>	<b>100,0</b>	

a/ La Comisión de Crédito del BID se pagará en divisas.

CALENDARIO DE INVERSIONES POR UNIVERSIDAD  
(US\$ miles)UNIVERSIDAD FEDERAL DE CEARA

<u>Categorías de Inversión</u>	<u>I AÑO</u>	<u>II AÑO</u>	<u>III AÑO</u>	<u>IV AÑO</u>	<u>TOTAL</u>	<u>%</u>
1. <u>Ingeniería y Administración</u>	1.025	825	825	825	3.500	8,9
1.1 Diseños	-25	-	-	-	-	-
1.2 Administración y Superv.	1.025	825	825	825	3.500	8,9
1.2.1 Central	325	325	325	325	1.300	3,3
1.2.2 Agentes	700	500	500	500	2.200	5,6
2. <u>Costos Directos</u>	3.800	10.600	5.500	4.100	24.000	60,8
2.1 Obras e Instalaciones	2.700	9.100	4.200	1.500	17.500	44,4
2.2 Equipos	1.100	1.500	1.300	2.600	6.500	16,4
3. <u>Costos Concurrentes</u>	1.040	1.290	1.440	1.080	4.850	12,3
3.1 Capacitación Personal	1.000	1.250	1.400	1.050	4.700	11,9
3.1.1 Docente en País	800	900	1.100	800	3.600	9,1
3.1.2 Docente en exterior	100	200	200	100	600	1,5
3.1.3 Técnico Administrativo	100	150	100	150	500	1,3
3.2 Asistencia Técnica	40	40	40	30	150	0,4
4. <u>Sin Asignación Específica</u>	200	1.400	1.200	1.200	4.000	10,1
4.1 Imprevistos	200	1.400	1.200	1.200	4.000	10,1
5. <u>Gastos Financieros</u>	250	600	1.000	1.250	3.100	7,9
5.1 Intereses	110	460	920	1.210	2.700	6,8
5.2 Comisión Crédito BID a/	115	70	60	5	250	0,7
5.3 Inspección/Vigilancia	25	70	20	35	150	0,4
<b>T O T A L</b>	6.315 =====	14.715 =====	9.965 =====	8.455 =====	39.450 =====	100,0 =====
<b>PORCENTAJE</b>	16,0 =====	37,0 =====	25,0 =====	22,0 =====	100,0 =====	

a/ La Comisión de Crédito del BID se pagará en divisas.

CALENDARIO DE INVERSIONES POR UNIVERSIDAD  
(US\$ miles)

UNIVERSIDAD FEDERAL DE AMAZONAS

<u>Categorías de Inversión</u>	<u>I AÑO</u>	<u>II AÑO</u>	<u>III AÑO</u>	<u>IV AÑO</u>	<u>TOTAL</u>	<u>%</u>
1. <u>Ingeniería y Administración</u>	700	500	500	500	2.200	8,9
1.1 Diseños	-	-	-	-	-	-
1.2 Administración y Superv.	700	500	500	500	2.200	8,9
1.2.1 Central	200	200	200	200	800	3,2
1.2.2 Agentes	500	300	300	300	1.400	5,7
2. <u>Costos Directos</u>	3.460	6.080	4.260	1.200	15.000	60,9
2.1 Obras e Instalaciones	2.600	5.300	3.300	800	12.000	48,7
2.2 Equipos	860	780	960	400	3.000	12,2
3. <u>Costos Concurrentes</u>	660	810	870	660	3.000	12,2
3.1 Capacitación Personal	640	780	840	640	2.900	11,8
3.1.1 Docente en País	500	550	650	500	2.200	8,9
3.1.2 Docente en exterior	70	130	130	70	400	1,7
3.1.3 Técnico Administrativo	70	100	60	70	300	1,2
3.2 Asistencia Técnica	20	30	30	20	100	0,4
4. <u>Sin Asignación Específica</u>	125	875	750	750	2.500	10,1
4.1 Imprevistos	125	875	750	750	2.500	10,1
5. <u>Gastos Financieros</u>	160	370	640	780	1.950	7,9
5.1 Intereses	70	290	580	760	1.700	6,9
5.2 Comisión Crédito BID a/	70	40	35	5	150	0,6
5.3 Inspección/Vigilancia	20	40	25	15	100	0,4
T O T A L	5.105	8.635	7.020	3.890	24.650	100,0
	=====	=====	=====	=====	=====	=====
PORCENTAJE	21,0	35,0	28,0	16,0	100,0	
	=====	=====	=====	=====	=====	

a/ La Comisión de Crédito del BID se pagará en divisas.

CALENDARIO DE INVERSIONES POR UNIVERSIDAD  
(US\$ miles)

UNIVERSIDAD FEDERAL DE MARANHÃO

<u>Categorías de Inversión</u>	<u>I AÑO</u>	<u>II AÑO</u>	<u>III AÑO</u>	<u>IV AÑO</u>	<u>TOTAL</u>	<u>%</u>
1. <u>Ingeniería y Administración</u>	775	425	425	425	2.050	10,0
1.1 Diseños	150	-	-	-	150	0,7
1.2 Administración y Superv.	625	425	425	425	1.900	9,3
1.2.1 Central	175	175	175	175	700	3,3
1.2.2 Agentes	450	250	250	250	1.200	6,0
2. <u>Costos Directos</u>	2.070	4.140	3.140	2.650	12.000	59,6
2.1 Obras e Instalaciones	1.400	3.850	1.800	1.950	9.000	44,7
2.2 Equipos	670	290	1.340	700	3.000	14,9
3. <u>Costos Concurrentes</u>	560	700	715	525	2.500	12,4
3.1 Capacitación Personal	535	660	690	515	2.400	11,9
3.1.1 Docente en País	415	450	520	415	1.800	8,9
3.1.2 Docente en exterior	50	100	100	50	300	1,5
3.1.3 Técnico Administrativo	70	110	70	50	300	1,5
3.2 Asistencia Técnica	25	40	25	10	100	0,5
4. <u>Sin Asignación Específica</u>	100	700	600	600	2.000	10,0
4.1 Imprevistos	100	700	600	600	2.000	10,0
5. <u>Gastos Financieros</u>	145	290	525	640	1.600	8,0
5.1 Intereses	55	230	470	620	1.375	7,0
5.2 Comisión Crédito BID a/	70	40	35	5	150	0,8
5.3 Inspección/Vigilancia	20	20	20	15	75	0,2
<b>T O T A L</b>	<b>3.650</b>	<b>6.255</b>	<b>5.405</b>	<b>4.840</b>	<b>20,150</b>	<b>100,0</b>
<b>PORCENTAJE</b>	<b>18,0</b>	<b>31,0</b>	<b>27,0</b>	<b>24,0</b>	<b>100,0</b>	

a/ La Comisión de Crédito del BID se pagará en divisas.

CALENDARIO DE INVERSIONES POR UNIVERSIDAD  
(US\$ miles)

UNIVERSIDAD FEDERAL DE GOIAS

<u>Categorías de Inversión</u>	<u>I AÑO</u>	<u>II AÑO</u>	<u>III AÑO</u>	<u>IV AÑO</u>	<u>TOTAL</u>	<u>%</u>
1. <u>Ingeniería y Administración</u>	490	370	370	370	1.600	8,4
1.1 Diseños	-	-	-	-	-	-
1.2 Administración y Superv.	490	370	370	370	1.600	8,4
1.2.1 Central	150	150	150	150	600	3,2
1.2.2 Agentes	340	220	220	220	1.000	5,2
2. <u>Costos Directos</u>	2.130	5.450	1.360	2.560	11.500	60,7
2.1 Obras e Instalaciones	1.300	4.350	800	2.050	8.500	44,8
2.2 Equipos	830	1.100	560	510	3.000	15,9
3. <u>Costos Concurrentes</u>	545	680	700	525	2.450	12,9
3.1 Capacitación Personal	535	660	690	515	2.400	12,6
3.1.1 Docente en País	415	450	520	415	1.800	9,4
3.1.2 Docente en exterior	50	100	100	50	300	1,6
3.1.3 Técnico Administrativo	70	110	70	50	300	1,6
3.2 Asistencia Técnica	10	20	10	10	50	0,3
4. <u>Sin Asignación Específica</u>	95	665	570	570	1.900	10,0
4.1 Imprevistos	95	665	570	570	1.900	10,0
5. <u>Gastos Financieros</u>	140	280	490	590	1.500	8,0
5.1 Intereses	50	220	435	575	1.280	7,0
5.2 Comisión Crédito BID a/	70	40	35	5	150	0,7
5.3 Inspección/Vigilancia	20	20	20	10	70	0,3
<b>T O T A L</b>	<b>3.400</b> =====	<b>7.445</b> =====	<b>3.490</b> =====	<b>4.615</b> =====	<b>18.950</b> =====	<b>100,0</b> =====
<b>PORCENTAJE</b>	<b>18,0</b> =====	<b>39,0</b> =====	<b>18,0</b> =====	<b>25,0</b> =====	<b>100,0</b> =====	

a/ La Comisión de Crédito del BID se pagará en divisas.



CALENDARIO DE INVERSIONES POR UNIVERSIDAD  
(US\$ miles)UNIVERSIDAD FEDERAL DE ALAGOAS

<u>Categorías de Inversión</u>	<u>I AÑO</u>	<u>II AÑO</u>	<u>III AÑO</u>	<u>IV AÑO</u>	<u>TOTAL</u>	<u>%</u>
1. <u>Ingeniería y Administración</u>	615	345	345	345	1.650	9,6
1.1 Diseños	150	-	-	-	150	1,0
1.2 Administración y Superv.	465	345	345	345	1.500	8,6
1.2.1 Central	125	125	125	125	500	3,0
1.2.2 Agentes	340	220	220	220	1.000	5,6
2. <u>Costos Directos</u>	2.345	7.180	790	185	10.500	61,4
2.1 Obras e Instalaciones	1.900	4.850	600	150	7.500	43,9
2.2 Equipos	445	2.330	190	35	3.000	17,5
3. <u>Costos Concurrentes</u>	445	550	570	435	2.000	11,7
3.1 Capacitación Personal	435	530	560	425	1.950	11,4
3.1.1 Docente en País	345	375	435	345	1.500	8,6
3.1.2 Docente en exterior	45	80	80	45	250	1,5
3.1.3 Técnico Administrativo	45	75	45	35	200	1,3
3.2 Asistencia Técnica	10	20	10	10	50	0,3
4. <u>Sin Asignación Específica</u>	85	595	510	510	1.700	10,0
4.1 Imprevistos	85	595	510	510	1.700	10,0
5. <u>Gastos Financieros</u>	105	230	415	500	1.250	7,3
5.1 Intereses	40	185	370	490	1.085	6,4
5.2 Comisión Crédito BID a/	45	25	25	5	100	0,6
5.3 Inspección/Vigilancia	20	20	20	5	65	0,3
T O T A L	3.595	8.900	2.630	1.975	17.100	100,0
PORCENTAJE	21,0	52,0	15,0	12,0	100,0	

a/ La Comisión de Crédito del BID se pagará en divisas.

CALENDARIO DE INVERSIONES POR UNIVERSIDAD  
(US\$ miles)

UNIVERSIDAD FEDERAL DE JUIZ DE FORA

<u>Categorías de Inversión</u>	<u>I AÑO</u>	<u>II AÑO</u>	<u>III AÑO</u>	<u>IV AÑO</u>	<u>TOTAL</u>	<u>%</u>
1. <u>Ingeniería y Administración</u>	525	275	275	275	1.350	10,2
1.1 Diseños	150	-	-	-	150	1,2
1.2 Administración y Superv.	375	275	275	275	1.200	9,0
1.2.1 Central	100	100	100	100	400	3,0
1.2.2 Agentes	275	175	175	175	800	6,0
2. <u>Costos Directos</u>	1.505	3.910	1.645	940	8.000	60,0
2.1 Obras e Instalaciones	950	2.100	1.350	600	5.000	37,5
2.2 Equipos	555	1.810	295	340	3.000	22,5
3. <u>Costos Concurrentes</u>	365	460	470	355	1.650	12,4
3.1 Capacitación Personal	355	440	460	345	1.600	12,0
3.1.1 Docente en País	275	300	350	275	1.100	9,0
3.1.2 Docente en exterior	35	65	65	35	200	1,5
3.1.3 Técnico Administrativo	45	75	45	35	200	1,5
3.2 Asistencia Técnica	10	20	10	10	50	0,4
4. <u>Sin Asignación Específica</u>	65	440	375	370	1.250	9,5
4.1 Imprevistos	65	440	375	370	1.250	9,5
5. <u>Gastos Financieros</u>	90	190	335	435	1.050	7,9
5.1 Intereses	35	155	300	415	905	6,7
5.2 Comisión Crédito BID a/	45	25	25	5	100	0,8
5.3 Inspección/Vigilancia	10	10	10	15	45	0,4
<b>T O T A L</b>	<b>2.550</b>	<b>5.275</b>	<b>3.100</b>	<b>2.375</b>	<b>13.300</b>	<b>100,0</b>
<b>PORCENTAJE</b>	<b>19,0</b>	<b>40,0</b>	<b>23,0</b>	<b>18,0</b>	<b>100,0</b>	

a/ La Comisión de Crédito del BID se pagará en divisas.

CALENDARIO DE INVERSIONES POR UNIVERSIDAD  
(US\$ miles)

UNIVERSIDAD FEDERAL DE MATO GROSSO

<u>Categorías de Inversión</u>	<u>I AÑO</u>	<u>II AÑO</u>	<u>III AÑO</u>	<u>IV AÑO</u>	<u>TOTAL</u>	<u>%</u>
1. <u>Ingeniería y Administración</u>	435	205	205	205	1.050	10,4
1.1 Diseños	150	-	-	-	150	1,4
1.2 Administración y Superv.	205	205	205	205	900	9,0
1.2.1 Central	75	75	75	75	300	3,0
1.2.2 Agentes	210	130	130	130	600	6,0
2. <u>Costos Directos</u>	2.435	2.870	320	375	6.000	60,0
2.1 Obras e Instalaciones	1.935	2.870	320	375	5.500	55,0
2.2 Equipos	500	-	-	-	500	5,0
3. <u>Costos Concurrentes</u>	260	330	340	270	1.200	12,0
3.1 Capacitación Personal	250	310	330	260	1.150	11,5
3.1.1 Docente en País	200	225	260	215	900	9,0
3.1.2 Docente en exterior	25	50	50	25	150	1,5
3.1.3 Técnico Administrativo	25	35	20	20	100	1,0
3.2 Asistencia Técnica	10	20	10	10	50	0,5
4. <u>Sin Asignación Específica</u>	50	350	300	300	1.000	9,8
4.1 Imprevistos	50	350	300	300	1.000	9,8
5. <u>Gastos Financieros</u>	60	145	260	335	800	7,8
5.1 Intereses	30	120	240	320	710	6,8
5.2 Comisión Crédito BID <u>a/</u>	20	15	10	5	50	0,5
5.3 Inspección/Vigilancia	10	10	10	10	40	0,5
<b>T O T A L</b>	<b>3.240</b> =====	<b>3.900</b> =====	<b>1.425</b> =====	<b>1.485</b> =====	<b>10.050</b> =====	<b>100,0</b> =====
<b>PORCENTAJE</b>	<b>32,0</b> =====	<b>39,0</b> =====	<b>14,0</b> =====	<b>15,0</b> =====	<b>100,0</b> =====	

a/ La Comisión de Crédito del BID se pagará en divisas.

CALENDARIO DE INVERSIONES POR UNIVERSIDAD  
(US\$ miles)

UNIVERSIDAD FEDERAL DE ACRE

<u>Categorías de Inversión</u>	<u>I AÑO</u>	<u>II AÑO</u>	<u>III AÑO</u>	<u>IV AÑO</u>	<u>TOTAL</u>	<u>%</u>
1. <u>Ingeniería y Administración</u>	445	185	185	185	1.000	11,6
1.1 Diseños	200	-	-	-	200	2,4
1.2 Administración y Superv.	245	185	185	185	800	9,2
1.2.1 Central	75	75	75	75	300	3,4
1.2.2 Agentes	170	110	110	110	500	5,8
2. <u>Costos Directos</u>	1.075	2.990	745	290	5.100	59,0
2.1 Obras e Instalaciones	900	2.300	400	200	3.800	44,0
2.2 Equipos	175	690	345	90	1.300	15,0
3. <u>Costos Concurrentes</u>	235	285	295	235	1.050	12,2
3.1 Capacitación Personal	225	265	285	225	1.000	11,6
3.1.1 Docente en País	185	200	230	185	800	9,2
3.1.2 Docente en exterior	20	30	30	20	100	1,2
3.1.3 Técnico Administrativo	20	35	25	20	100	1,2
3.2 Asistencia Técnica	10	20	10	10	50	0,6
4. <u>Sin Asignación Específica</u>	40	280	265	215	800	9,0
4.1 Imprevistos	40	280	265	215	800	9,0
5. <u>Gastos Financieros</u>	60	130	150	360	700	8,2
5.1 Intereses	25	105	140	350	620	7,0
5.2 Comisión Crédito BID a/	25	15	5	5	50	0,6
5.3 Inspección/Vigilancia	10	10	5	5	30	0,6
<b>T O T A L</b>	<b>1.855</b> =====	<b>3.870</b> =====	<b>1.640</b> =====	<b>1.285</b> =====	<b>8.650</b> =====	<b>100,0</b> =====
<b>PORCENTAJE</b>	<b>21,0</b> =====	<b>45,0</b> =====	<b>19,0</b> =====	<b>15,0</b> =====	<b>100,0</b> =====	

a/ La Comisión de Crédito del BID se pagará en divisas.

CALENDARIO DE INVERSIONES  
POR UNIVERSIDAD  
(US\$ miles)

UNIVERSIDAD FEDERAL DE FLUMINENSE

	S E M E S T R E S								TOTAL
	I	II	III	IV	V	VI	VII	VIII	
<u>OBRAS E INSTALACIONES</u>	<u>2.000</u>	<u>3.000</u>	<u>3.500</u>	<u>4.100</u>	<u>3.600</u>	<u>2.200</u>	<u>2.400</u>	<u>700</u>	<u>21.500</u>
Inst. Adm. & Salas Aulas	-	500	900	800	400	-	-	-	2.600
Lab. de Educación	-	-	-	200	-	-	-	-	200
Lab. Física y Geociencia	500	1.500	1.000	300	-	-	-	-	3.300
Concl. Biblioteca Central	500	-	-	-	-	-	-	-	500
1era. Etapa Biblioteca	-	-	-	-	-	-	-	-	-
Ciencias Humanas	-	-	100	400	500	300	-	-	1.300
8 Unid. Func. Adm.	-	-	1.300	2.200	2.600	1.200	600	600	8.500
1era. Etapa Lab. Farmacia	-	-	-	-	-	200	1.400	-	1.600
Reforma Edif. Cienc. Hum.	-	-	-	-	-	400	300	-	700
Obras Varias	1.000	1.000	200	200	100	100	100	100	2.800
<u>EQUIPAMIENTO</u>	<u>800</u>	<u>880</u>	<u>200</u>	<u>1.280</u>	<u>840</u>	<u>1.200</u>	<u>1.570</u>	<u>730</u>	<u>7.500</u>
Inst. Adm. & Salas Aulas	-	-	100	410	-	-	-	-	510
Lab. de Educación	-	-	-	50	840	940	600	-	2.430
Lab. Física y Geociencia	-	-	-	820	-	-	-	-	820
8 Unid. Func. Adm.	-	-	-	-	-	60	170	380	610
Bib. Ciencias Humanas	-	-	-	-	-	-	-	350	350
Lab. Farmacia	-	-	-	-	-	200	-	-	200
Edif. Ciencias Humanas	-	-	-	-	-	-	400	-	400
Biblioteca Central	-	300	100	-	-	-	-	-	400
Laboratorio Farmacia	800	580	-	-	-	-	400	-	1.780

CALENDARIO DE INVERSIONES  
POR UNIVERSIDAD  
(US\$ miles)

UNIVERSIDAD FEDERAL DE CEARA

	S E M E S T R E S								
	I	II	III	IV	V	VI	VII	VIII	TOTAL
<u>OBRAS E INSTALACIONES</u>	<u>1.000</u>	<u>1.700</u>	<u>5.300</u>	<u>3.800</u>	<u>1.400</u>	<u>2.800</u>	<u>1.500</u>	<u>-</u>	<u>17.500</u>
Odontología	450	550	800	-	-	-	-	-	1.800
Dept. Morfología	-	200	600	300	-	-	-	-	1.100
Dept. de Enfermería	-	200	750	-	-	-	-	-	950
Dept. de Farmacia	-	-	50	50	-	-	-	-	100
Dept. Salud Comunitaria	-	-	50	100	-	-	-	-	150
Dept. Didáctico-Administ.	-	550	700	-	-	-	-	-	1.250
5 Centros de Estudio	-	-	1.550	3.250	400	1.800	1.200	-	8.200
Obras Varias Campus de Porangabuçu	-	-	800	100	-	-	-	-	900
Obras varias Campus de PICI	-	-	-	-	1.000	1.000	300	-	2.300
Administración Sectorial	550	200	-	-	-	-	-	-	750
<u>EQUIPAMIENTO</u>	<u>400</u>	<u>700</u>	<u>900</u>	<u>600</u>	<u>500</u>	<u>800</u>	<u>2.600</u>	<u>-</u>	<u>6.500</u>
Odontología	-	200	600	-	-	-	-	-	800
Dept. Morfología	-	-	100	100	-	-	-	-	200
Dept. de Enfermería	-	-	100	100	-	-	-	-	200
Dept. de Farmacia	50	-	-	-	-	-	-	-	50
Dept. Salud Comunitaria	50	-	-	-	-	-	-	-	50
5 Centros de Estudio	-	-	-	400	500	800	2.600	-	4.300
Adm. Sectorial	-	200	-	-	-	-	-	-	200
Biblioteca	150	300	-	-	-	-	-	-	450
Núcleo Procesamiento Datos	150	-	-	-	-	-	-	-	150
Dept. Didáctico-Adm.	-	-	100	-	-	-	-	-	100

CALENDARIO DE INVERSIONES  
POR UNIVERSIDAD  
(US\$ miles)

UNIVERSIDAD FEDERAL DE AMAZONAS

	S E M E S T R E S								
	I	II	III	IV	V	VI	VII	VIII	TOTAL
<u>OBRAS E INSTALACIONES</u>	<u>800</u>	<u>1.800</u>	<u>3.500</u>	<u>1.800</u>	<u>2.000</u>	<u>1.300</u>	<u>600</u>	<u>200</u>	<u>12.000</u>
Administración Académica	-	600	950	300	200	400	-	-	2.450
Salas Especiales	550	300	-	-	-	-	-	-	850
Anfiteatro	-	-	400	300	-	-	-	-	700
6 Laboratorios	-	-	200	300	200	150	200	50	1.100
Lazer Sectorial	-	-	50	400	-	-	-	-	450
Bibliotecas de Salud y Central	-	250	200	-	-	350	300	150	1.250
Facultad de Tecnología	-	-	800	-	-	-	-	-	800
Infraestructura Gral.	-	50	900	450	1.000	350	100	-	2.850
Aulas Expositivas	250	600	-	50	600	50	-	-	1.550
<u>EQUIPAMIENTO</u>	<u>360</u>	<u>500</u>	<u>570</u>	<u>210</u>	<u>600</u>	<u>360</u>	<u>250</u>	<u>150</u>	<u>3.000</u>
Medicina	360	-	50	-	100	-	-	-	510
Odonotología	-	50	150	-	100	-	-	-	300
Farmacia	-	50	150	-	100	-	100	-	400
Administración Académica	-	50	50	-	-	-	-	-	100
Bibliotecas de Salud y Central	-	-	-	50	50	300	-	100	500
Aulas Expositivas	-	50	50	-	-	-	-	-	100
6 Laboratorios	-	250	70	160	250	60	150	50	990
Salas Especiales	-	50	50	-	-	-	-	-	100

CALENDARIO DE INVERSIONESPOR UNIVERSIDAD

(US\$ miles)

UNIVERSIDAD FEDERAL DE MARANHÃO

	S E M E S T R E S								
	I	II	III	IV	V	VI	VII	VIII	TOTAL
<u>OBRAS E INSTALACIONES</u>	<u>200</u>	<u>1.200</u>	<u>2.200</u>	<u>1.650</u>	<u>800</u>	<u>1.000</u>	<u>1.600</u>	<u>350</u>	<u>9.000</u>
Centro Ciencias de Salud	170	1.170	2.040	500	-	-	-	-	3.880
Centro Tecnológico	-	-	-	1.000	670	120	-	-	1.790
Centro Estudios Básicos	-	-	-	-	-	730	1.500	350	2.580
Sist. Dist. Agua Potable	30	30	50	-	-	-	-	-	110
Sistema Colector Aguas Negras	-	-	50	50	10	-	-	-	110
Aguas Pluviales	-	-	10	10	10	-	-	-	30
Sist. Dist. Energ. Elect.	-	-	50	40	-	-	-	-	90
Sistema Vial	-	-	-	50	60	-	-	-	110
Urbanización	-	-	-	-	50	150	100	-	300
<u>EQUIPAMIENTO</u>	<u>100</u>	<u>570</u>	<u>100</u>	<u>190</u>	<u>700</u>	<u>640</u>	<u>500</u>	<u>200</u>	<u>3.000</u>
Centro Ciencias de Salud	100	570	100	190	50	150	-	200	1.360
Centro Tecnológico	-	-	-	-	650	390	400	-	1.440
Centro Estudios Básicos	-	-	-	-	-	100	100	-	200



CALENDARIO DE INVERSIONES  
POR UNIVERSIDAD  
 (US\$ miles)

UNIVERSIDAD FEDERAL DE GOIAS

	S E M E S T R E S								TOTAL
	I	II	III	IV	V	VI	VII	VIII	
<u>OBRAS E INSTALACIONES</u>	-	1.300	2.500	1.850	700	100	1.400	650	8.500
Salas de Aulas	-	400	800	700	-	-	-	-	1.900
Centro Educación	-	300	500	400	200	-	-	-	1.400
Centro Investigaciones	-	100	400	400	100	-	400	-	1.400
Consolidación Biblioteca Central	-	400	700	300	300	-	900	550	3.150
Infraestructura	-	100	100	50	100	-	100	100	550
<u>EQUIPAMIENTO</u>	200	630	600	500	250	310	300	210	3.000
Salas de Aula	-	200	300	200	-	-	-	-	700
Centro de Educación	-	100	100	100	-	-	-	-	300
Centro Investigaciones	100	130	-	100	-	-	-	-	330
Biblioteca Central	100	200	200	100	250	310	300	210	1.370

CALENDARIO DE INVERSIONES  
POR UNIVERSIDAD  
(US\$ miles)

UNIVERSIDAD FEDERAL DE ALAGOAS

	S E M E S T R E S								TOTAL
	I	II	III	IV	V	VI	VII	VIII	
<u>OBRAS E INSTALACIONES</u>	<u>800</u>	<u>1.100</u>	<u>2.700</u>	<u>2.150</u>	<u>200</u>	<u>400</u>	<u>150</u>	<u>-</u>	<u>7.500</u>
Proyectos Complementarios									
C.S.A.U	-	-	150	-	-	-	-	-	150
Biblioteca Central	-	-	500	500	-	-	-	-	1.000
Depts. Física/Química/ Matemáticas/Educ.	100	850	1.600	1.050	-	-	-	-	3.600
Salas de Aula	300	240	300	250	200	400	150	-	1.840
Restaurant	200	-	-	-	-	-	-	-	200
Prefeitura	-	-	-	200	-	-	-	-	200
Central Telefónica	100	10	-	-	-	-	-	-	110
Redes de Alta Tensión	100	-	-	-	-	-	-	-	100
Sistema Vial	-	-	150	150	-	-	-	-	300
<u>EQUIPAMIENTO</u>	<u>145</u>	<u>300</u>	<u>1.100</u>	<u>1.230</u>	<u>50</u>	<u>140</u>	<u>35</u>	<u>-</u>	<u>3.000</u>
4 Departamentos	-	200	1.000	800	-	-	-	-	2.000
Salas de Aula	45	100	100	100	50	140	35	-	570
Restaurante	100	-	-	100	-	-	-	-	200
Biblioteca Central	-	-	-	200	-	-	-	-	200
Prefeitura	-	-	-	30	-	-	-	-	30

CALENDARIO DE INVERSIONES  
POR UNIVERSIDAD  
 (US\$ miles)

UNIVERSIDAD FEDERAL DE JUIZ DE FORA

	S E M E S T R E S								
	I	II	III	IV	V	VI	VII	VIII	TOTAL
<u>OBRAS E INSTALACIONES</u>	<u>150</u>	<u>800</u>	<u>1.000</u>	<u>1.100</u>	<u>800</u>	<u>550</u>	<u>300</u>	<u>300</u>	<u>5.000</u>
Centro Integrado de Salud	-	-	300	550	250	150	100	100	1.450
Centro Pedagógico Educ.	-	-	100	100	100	100	50	100	550
Centro Audio Visual	-	-	-	50	50	-	-	-	100
Centro Proce. Datos	-	-	-	200	50	50	-	-	300
Laboratorio Fonética	50	50	-	-	-	-	-	-	100
Salas de Aula	-	400	300	50	100	100	50	50	1.050
Col. Tec. Universitario	-	100	100	50	50	-	-	-	300
Restaurante	-	-	-	-	150	100	50	-	300
Prefeitura	50	200	150	50	-	-	-	-	450
Obras Varias	50	50	50	50	50	50	50	50	400
<u>EQUIPAMIENTO</u>	<u>155</u>	<u>400</u>	<u>1.400</u>	<u>410</u>	<u>100</u>	<u>195</u>	<u>100</u>	<u>240</u>	<u>3.000</u>
Centro Integrado de Salud	-	-	150	-	-	-	-	-	150
Centro Pedagógico	-	-	-	50	50	50	-	-	150
Centro Audio Visual	-	-	100	-	-	-	-	-	100
Laboratorio Fonética	-	-	50	-	-	-	-	-	50
Salas de Aula	-	-	50	50	-	-	-	-	100
Col. Tec. Universitario	-	-	100	100	-	-	-	-	200
Restaurante	-	-	-	-	-	100	50	100	250
Prefeitura	-	-	50	-	-	-	-	-	50
Equipos Varios	155	400	900	210	50	45	50	140	1.950

CALENDARIO DE INVERSIONES  
POR UNIVERSIDAD  
 (US\$ miles)

UNIVERSIDAD FEDERAL DE MATO GROSSO

	S E M E S T R E S								
	I	II	III	IV	V	VI	VII	VIII	TOTAL
<u>OBRAS E INSTALACIONES</u>	<u>200</u>	<u>1.735</u>	<u>2.000</u>	<u>870</u>	<u>200</u>	<u>120</u>	<u>375</u>	<u>-</u>	<u>5.500</u>
Centro de Apoyo Educ.	200	1.585	200	-	-	-	-	-	1.985
Salas de Aula	-	150	1.600	170	200	120	375	-	2.615
Infraestructura	-	-	200	700	-	-	-	-	900
<u>EQUIPAMIENTO</u>	<u>500</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>500</u>
Centro Apoyo Educ.	200	-	-	-	-	-	-	-	200
Salas de Aula	300	-	-	-	-	-	-	-	300

TMA

200

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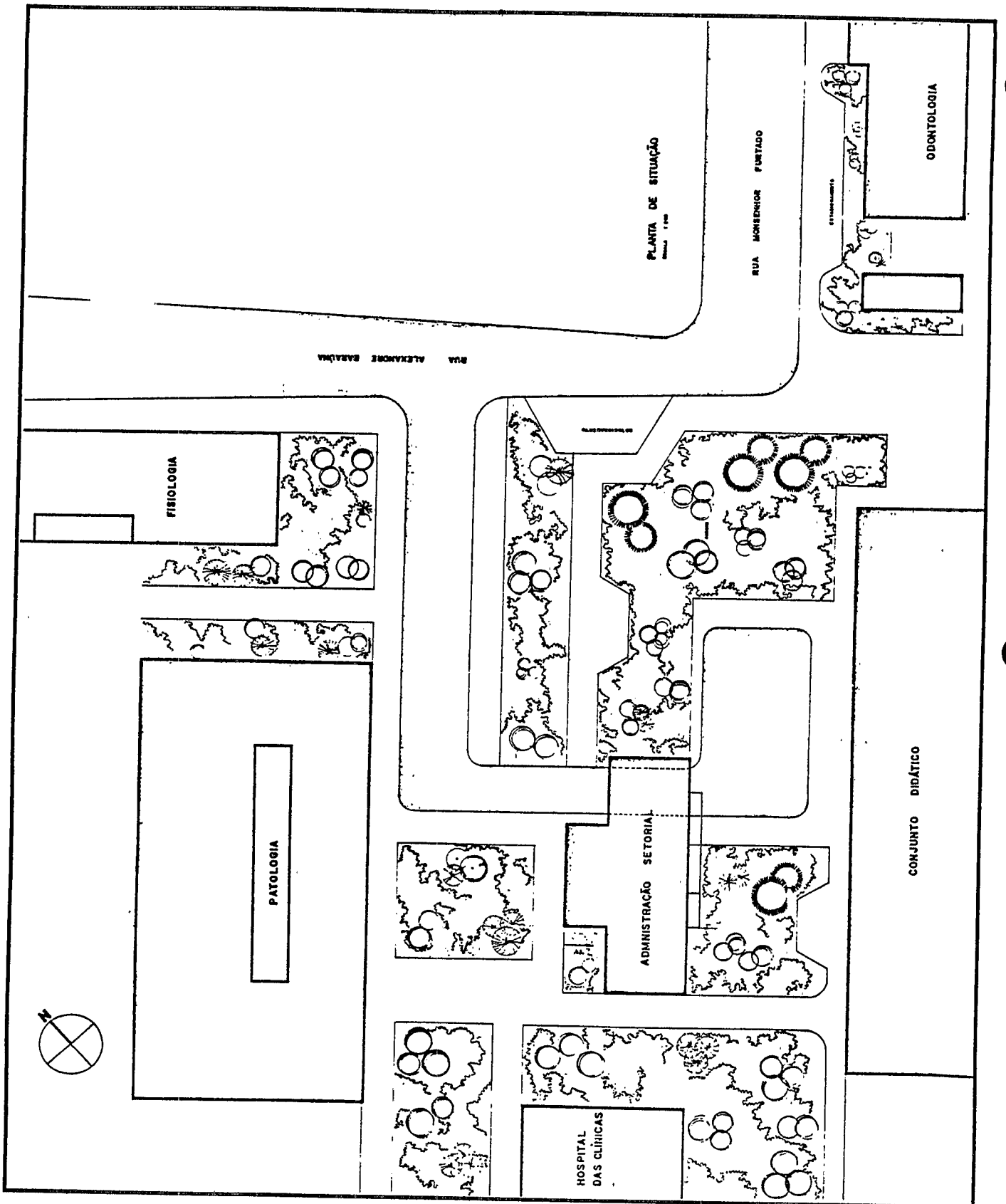
CALENDARIO DE INVERSIONES  
POR UNIVERSIDAD  
(US\$ miles)

UNIVERSIDAD FEDERAL DE ACRE

	S E M E S T R E S								
	I	II	III	IV	V	VI	VII	VIII	TOTAL
<u>OBRAS E INSTALACIONES</u>	<u>200</u>	<u>700</u>	<u>1.400</u>	<u>900</u>	<u>250</u>	<u>150</u>	<u>110</u>	<u>90</u>	<u>3.800</u>
Adm. Departamental	-	-	400	300	-	-	-	-	700
Salas de Profesores	200	400	300	-	-	-	-	-	900
Anfiteatro	-	-	-	-	-	50	-	-	50
Talleres	-	-	-	150	150	50	-	-	350
Oficina Mecánica	-	50	250	100	100	50	-	-	550
Prefeitura	-	-	-	-	-	-	110	90	200
Sistema Vial	-	-	150	150	-	-	-	-	300
Obras Varias	-	250	300	200	-	-	-	-	750
<u>EQUIPAMIENTO</u>	<u>75</u>	<u>100</u>	<u>550</u>	<u>140</u>	<u>250</u>	<u>95</u>	<u>-</u>	<u>90</u>	<u>1.300</u>
Anfiteatro	-	-	-	-	-	50	-	-	50
Lab. Ciencias Exactas	75	100	-	-	250	-	-	-	425
Talleres	-	-	-	-	-	45	-	-	45
Oficina Mecánica	-	-	-	140	-	-	-	-	140
Prefeitura	-	-	-	-	-	-	-	90	90
Laboratorio Biología	-	-	100	-	-	-	-	-	100
Biblioteca	-	-	450	-	-	-	-	-	450

PLANTAS FISICAS DE LAS UNIVERSIDADES







ÁREA DO VALONGUINHO T.01  
SETOR DE CIÊNCIAS DA SAÚDE S.01

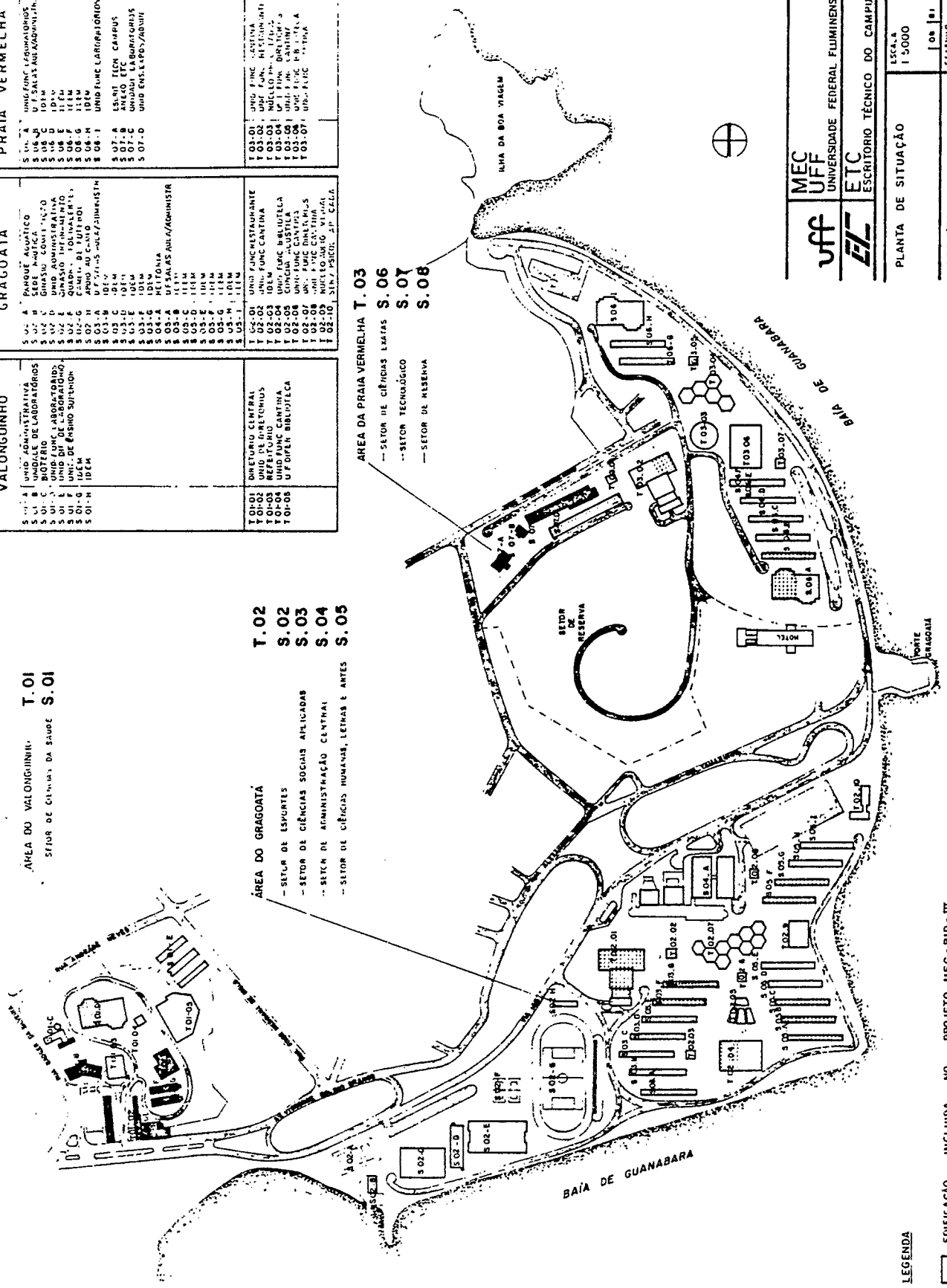
VALONGUINHO	
S.01-A UNID. ADMINISTRATIVA	T.01-01 DIRETORIO CENTRAL
S.01-B UNIDADE DE LABORATORIOS	T.01-02 UNID. DE REFEICAO
S.01-C BIOTRIO	T.01-03 UNID. FUNC. CANTINA
S.01-D UNID. FUNC. LABORATORIOS	T.01-04 UNID. FUNC. BIBLIOTECA
S.01-E UNID. FUNC. LABORATORIOS	
S.01-F UNID. DE ENSINO SUPERIOR	
S.01-G IDEM	
S.01-H IDEM	

GRAGOATÁ	
S.02-A PARQUE NAUTICO	T.02-01 UNID. FUNC. RESTAURANTE
S.02-B SEDE NAUTICA	T.02-02 UNID. CANTINA
S.02-C GINASIO COM. 10-20	T.02-03 IDEM
S.02-D UNID. ADMINISTRATIVA	T.02-04 UNID. FUNC. BIBLIOTECA
S.02-E UNID. FUNC. LABORATORIOS	T.02-05 UNID. FUNC. CANTINA
S.02-F QUADRA POLIVALENTE	T.02-06 UNID. FUNC. CANTINA
S.02-G CANTINA DE TUTORIA	T.02-07 UNID. FUNC. BIBLIOTECA
S.02-H UNID. FUNC. LABORATORIOS	T.02-08 UNID. FUNC. BIBLIOTECA
S.02-I UNID. FUNC. LABORATORIOS	T.02-09 UNID. FUNC. BIBLIOTECA
S.02-J UNID. FUNC. LABORATORIOS	T.02-10 UNID. FUNC. BIBLIOTECA

PRAIA VERMELHA	
S.03-A UNID. FUNC. LABORATORIOS	T.03-01 UNID. FUNC. BIBLIOTECA
S.03-B UNID. FUNC. LABORATORIOS	T.03-02 UNID. FUNC. BIBLIOTECA
S.03-C UNID. FUNC. LABORATORIOS	T.03-03 UNID. FUNC. BIBLIOTECA
S.03-D UNID. FUNC. LABORATORIOS	T.03-04 UNID. FUNC. BIBLIOTECA
S.03-E UNID. FUNC. LABORATORIOS	T.03-05 UNID. FUNC. BIBLIOTECA
S.03-F UNID. FUNC. LABORATORIOS	T.03-06 UNID. FUNC. BIBLIOTECA
S.03-G UNID. FUNC. LABORATORIOS	T.03-07 UNID. FUNC. BIBLIOTECA
S.03-H UNID. FUNC. LABORATORIOS	
S.03-I UNID. FUNC. LABORATORIOS	
S.03-J UNID. FUNC. LABORATORIOS	

ÁREA DO GRAGOATÁ T.02  
--SETOR DE ESPORTES S.02  
--SETOR DE CIÊNCIAS SOCIAIS APLICADAS S.03  
--SETOR DE ADMINISTRAÇÃO CENTRAL S.04  
--SETOR DE CIÊNCIAS HUMANAS, LETRAS E ARTES S.05

ÁREA DA PRAIA VERMELHA T.03  
--SETOR DE CIÊNCIAS EXATAS S.06  
--SETOR TECNOLÓGICO S.07  
--SETOR DE RESERVA S.08



MEC  
UFF  
UNIVERSIDADE FEDERAL FLUMINENSE

ETC  
ESCRITÓRIO TÉCNICO DO CAMPUS

PLANTA DE SITUAÇÃO	
ESCALA	1:5000
PROJETO DO CAMPUS	DESENHO
PROJETO DE IMPLANTAÇÃO	12

LEGENDA

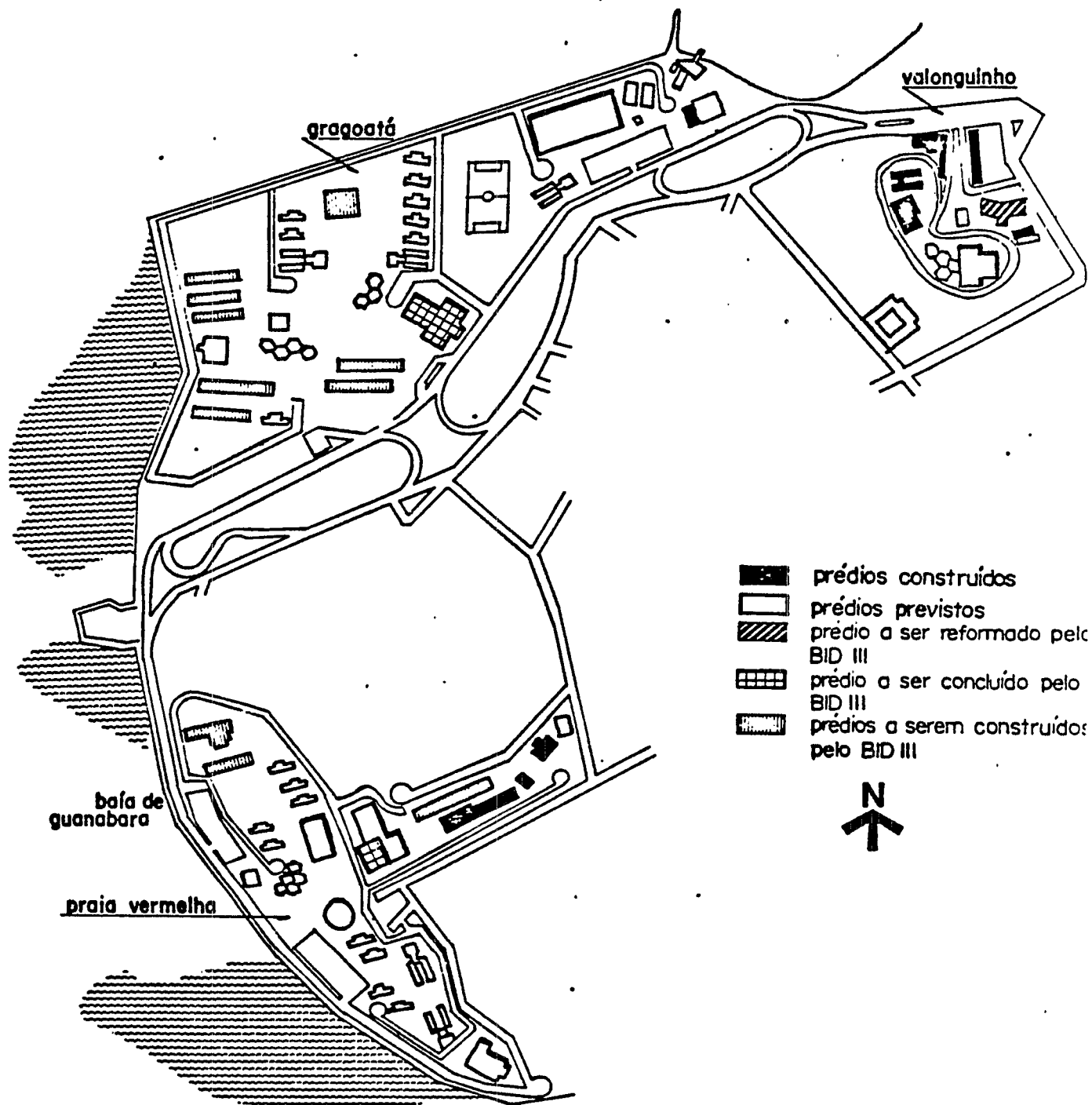
EDIFICAÇÃO	INCLUIDA NO PROJETO MEC-BID-III
EXISTENTE	

UNIVERSIDADE FEDERAL FLUMINENSE

ANEXO No. 18

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campus universitário



UNIVERSIDADE FEDERAL DO CEARÁ

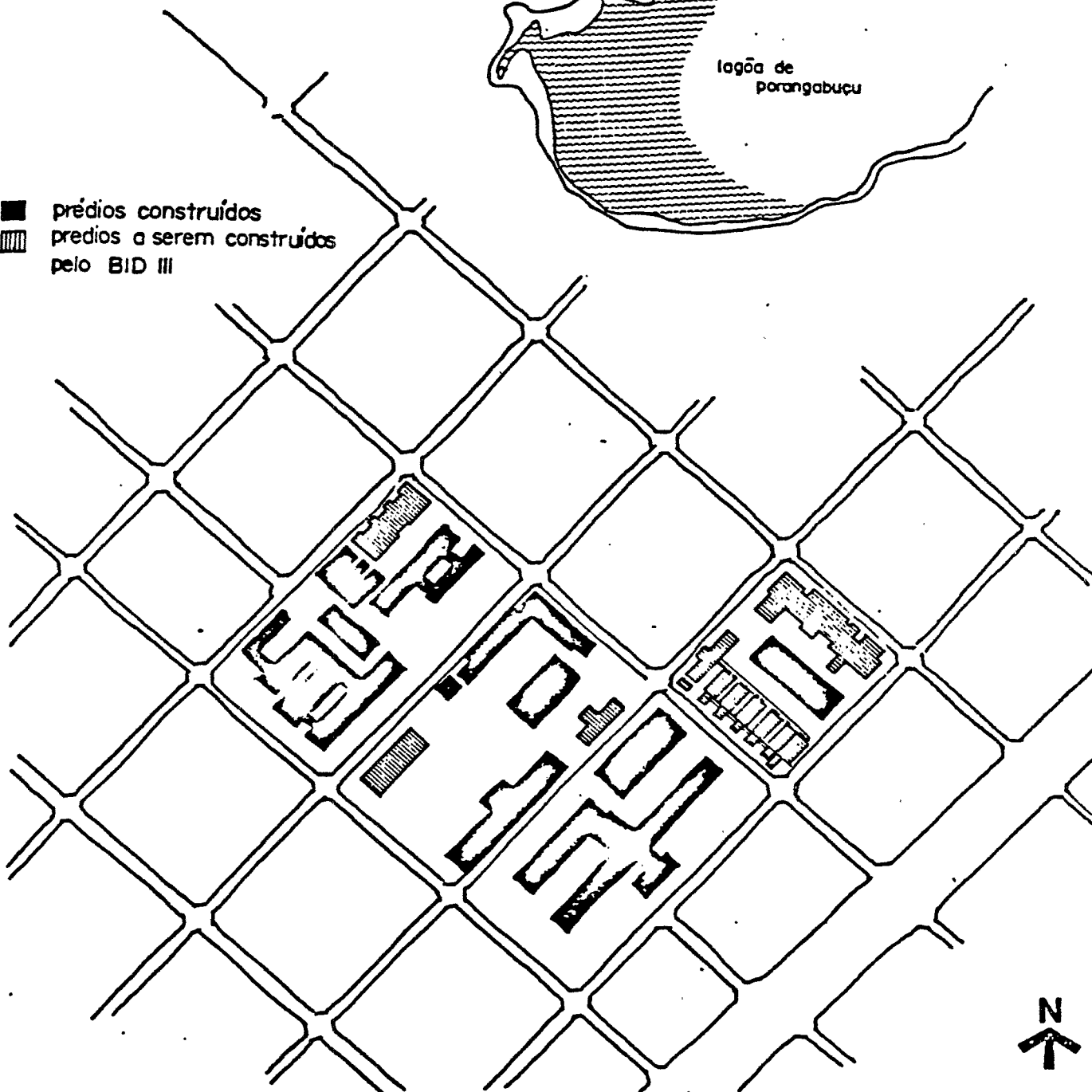
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campus 2  
porangabuçu

- prédios construídos
- ▨ prédios a serem construídos pelo BID III





lagõa de  
porangabuçu



UNIVERSIDADE FEDERAL DO CEARÁ

campus I  
pici

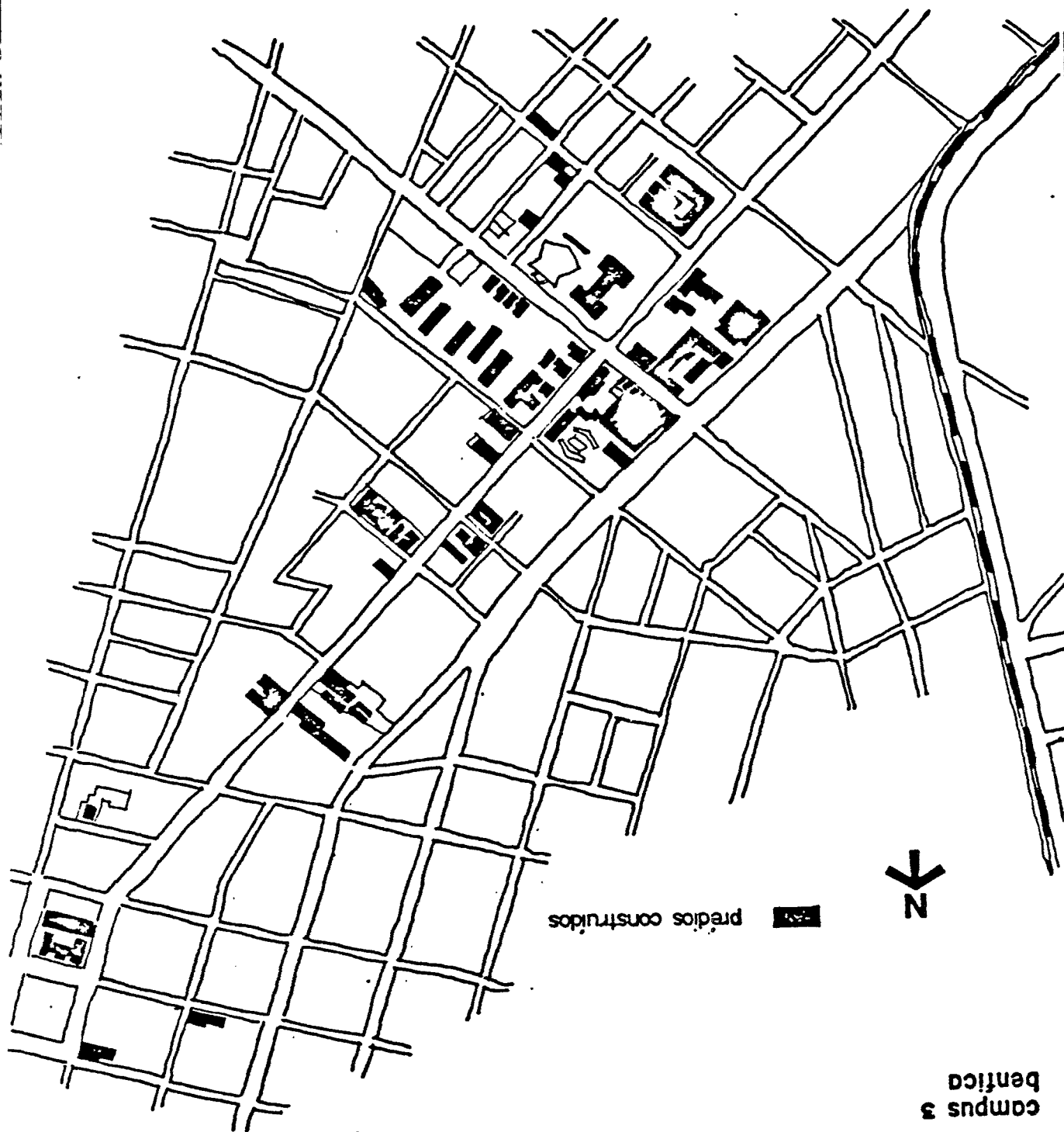
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-  prédios construídos  
 prédios a serem construídos pelo BID III

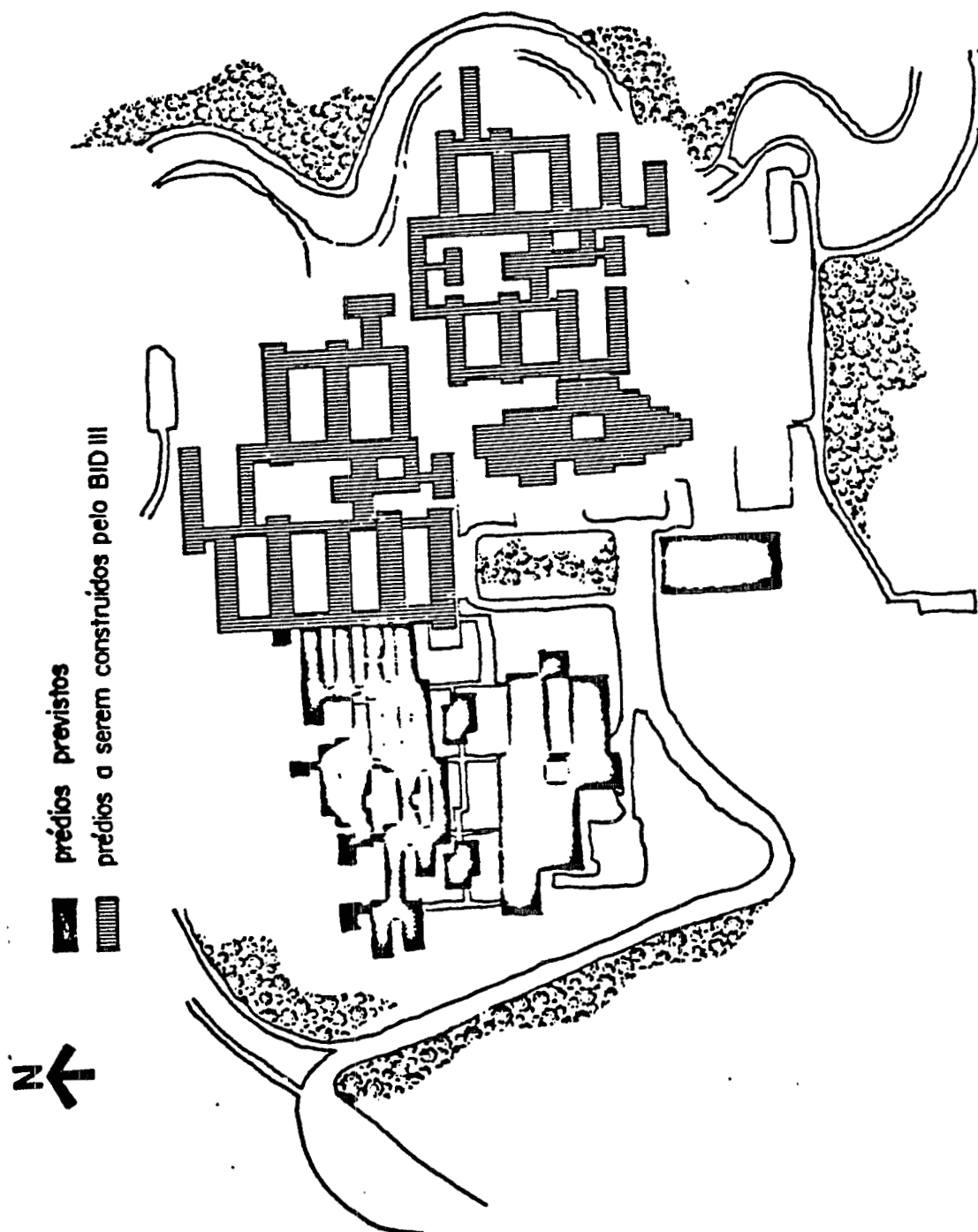


UNIVERSIDADE FEDERAL DO CEARÁ

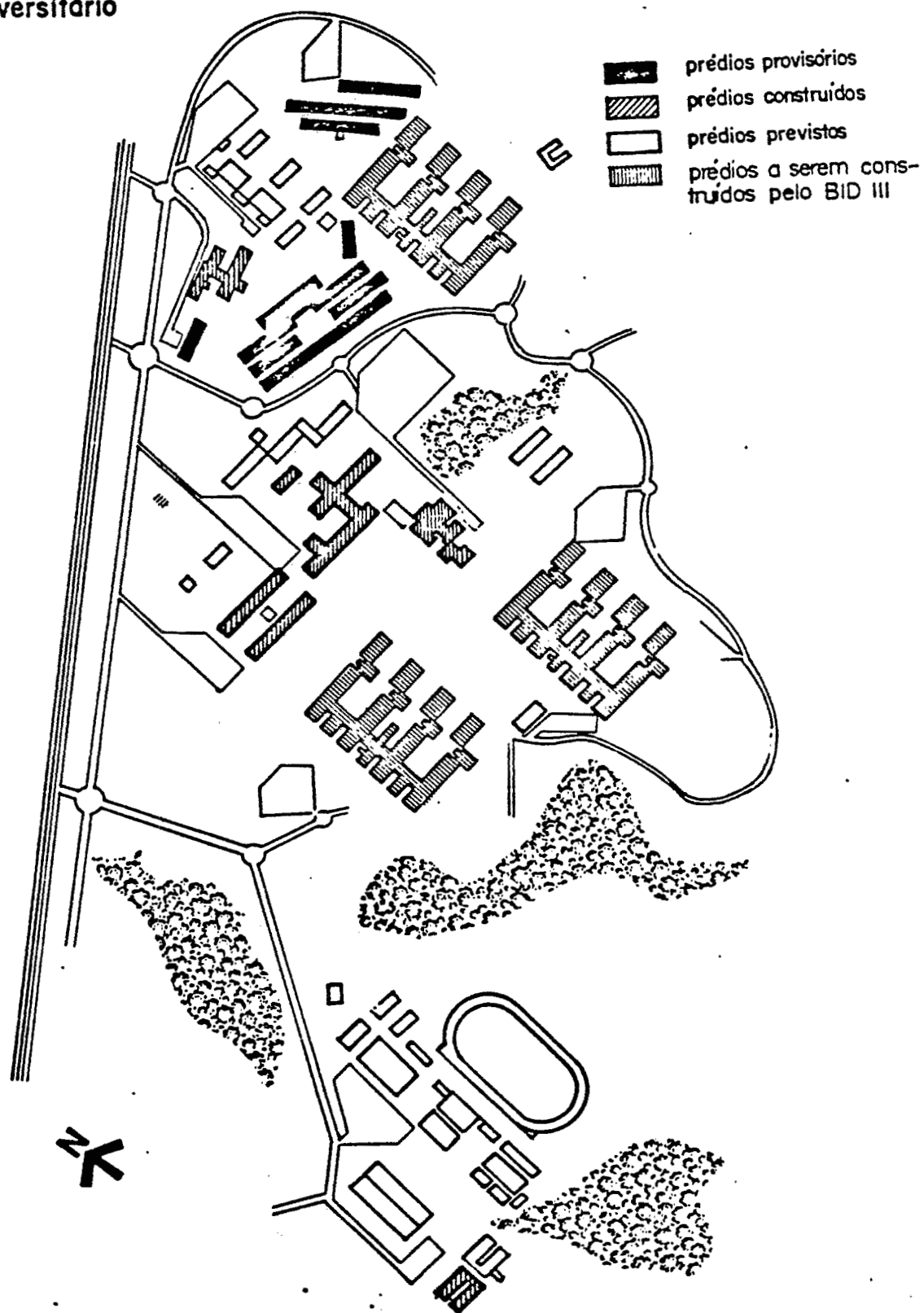
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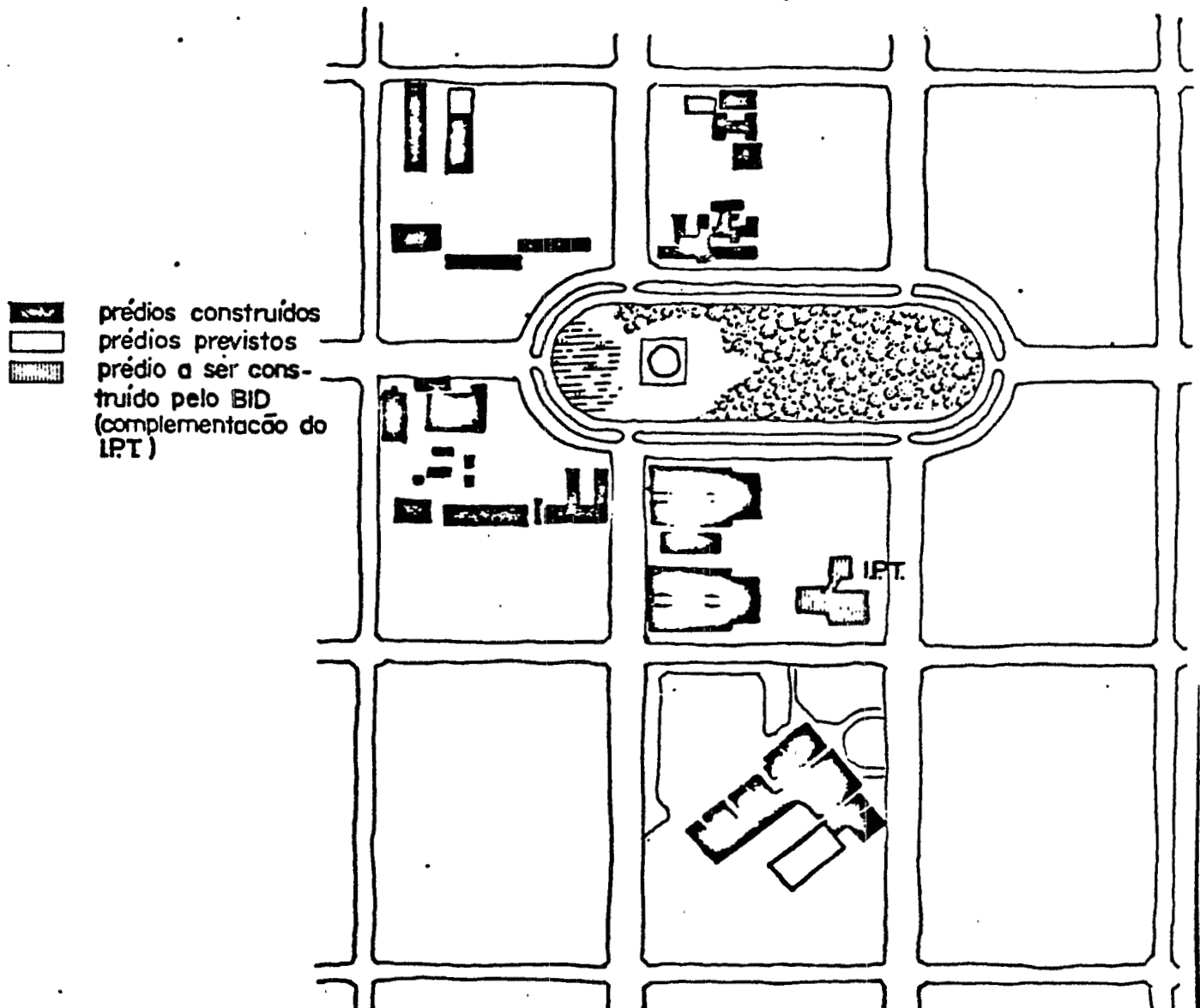
campus principal



campus universitário  
do bacanga



**campus I**  
**praça universitária**

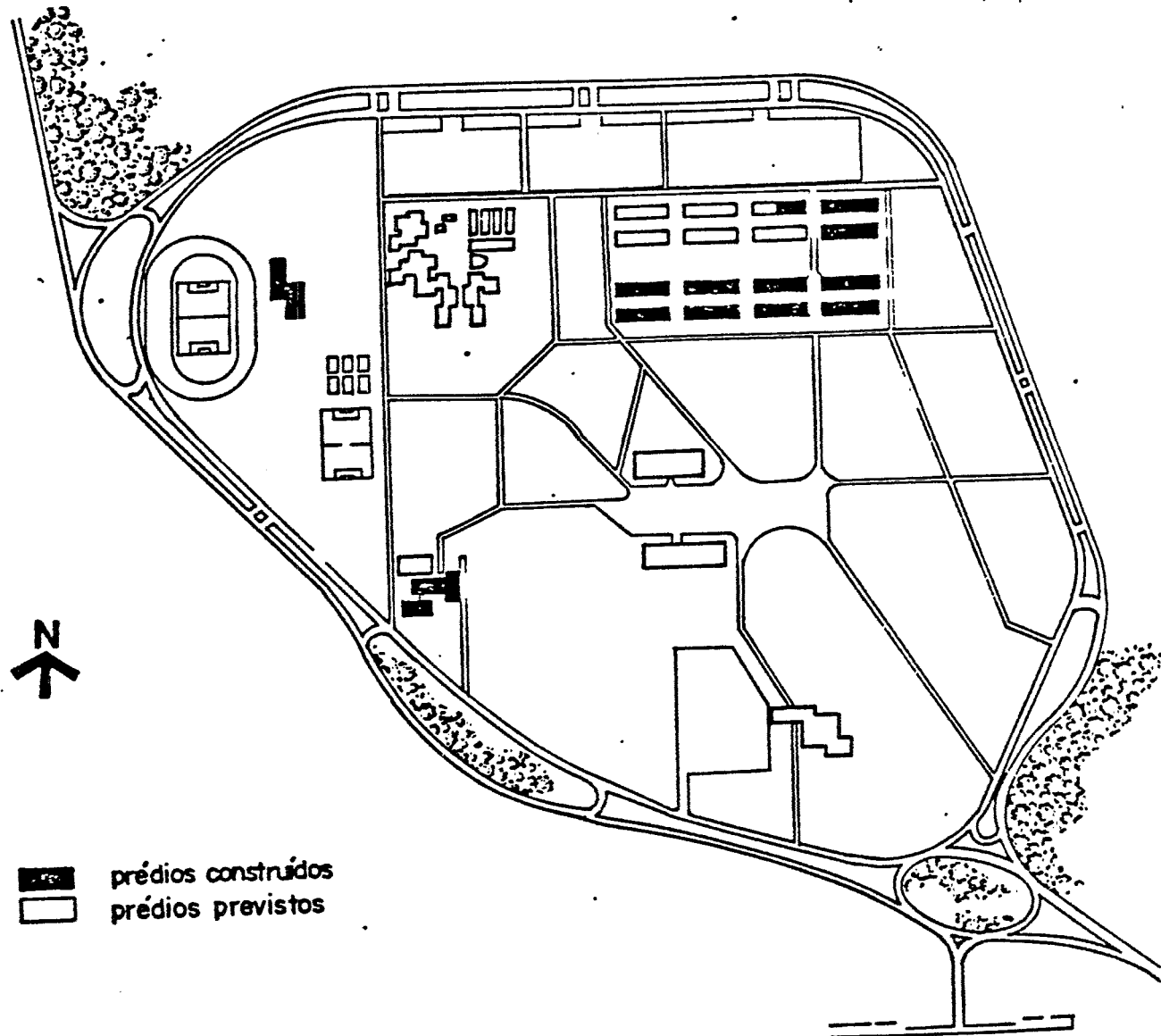




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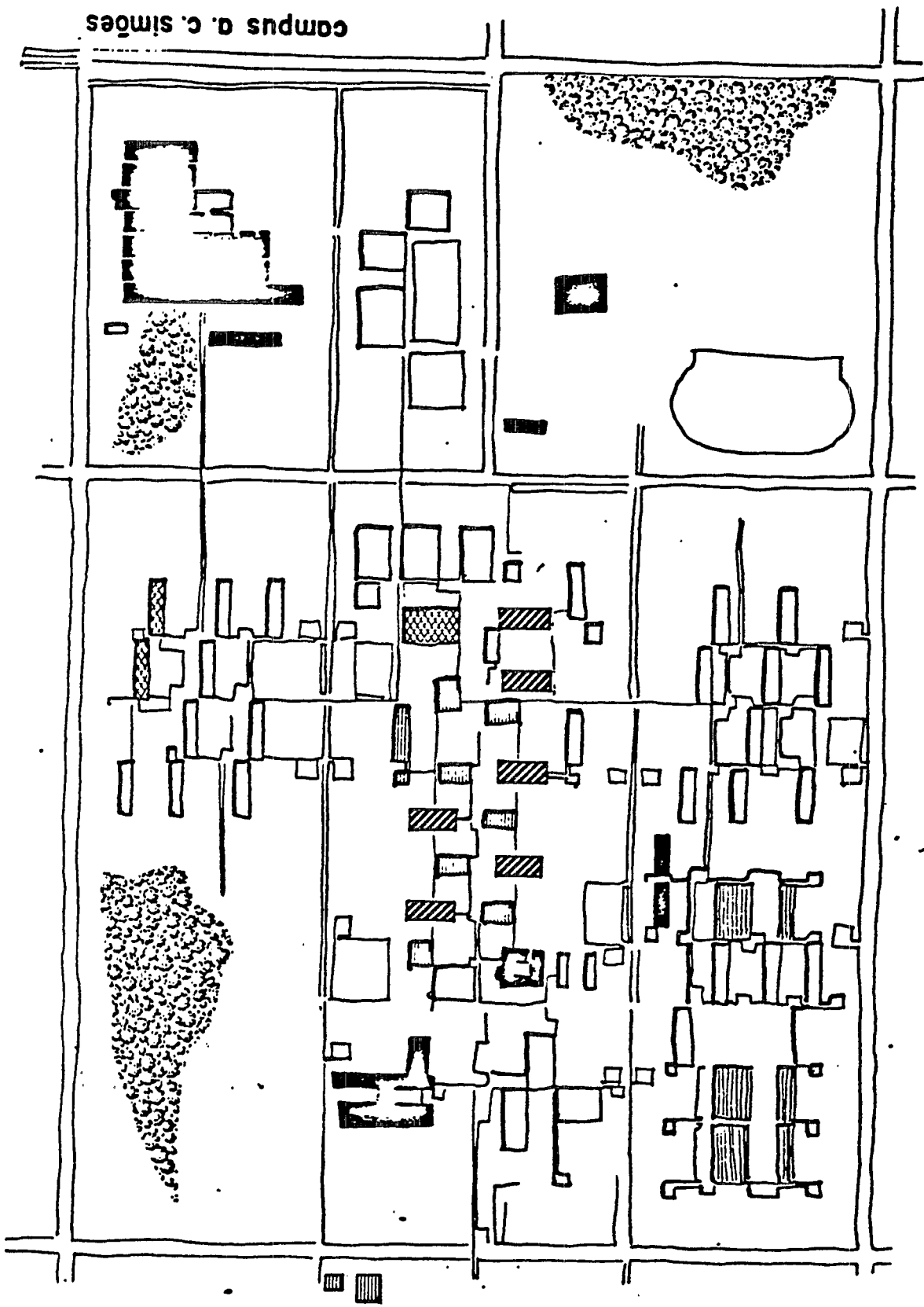
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**campus II  
samambaia**



# UNIVERSIDADE FEDERAL DE ATAGOAS

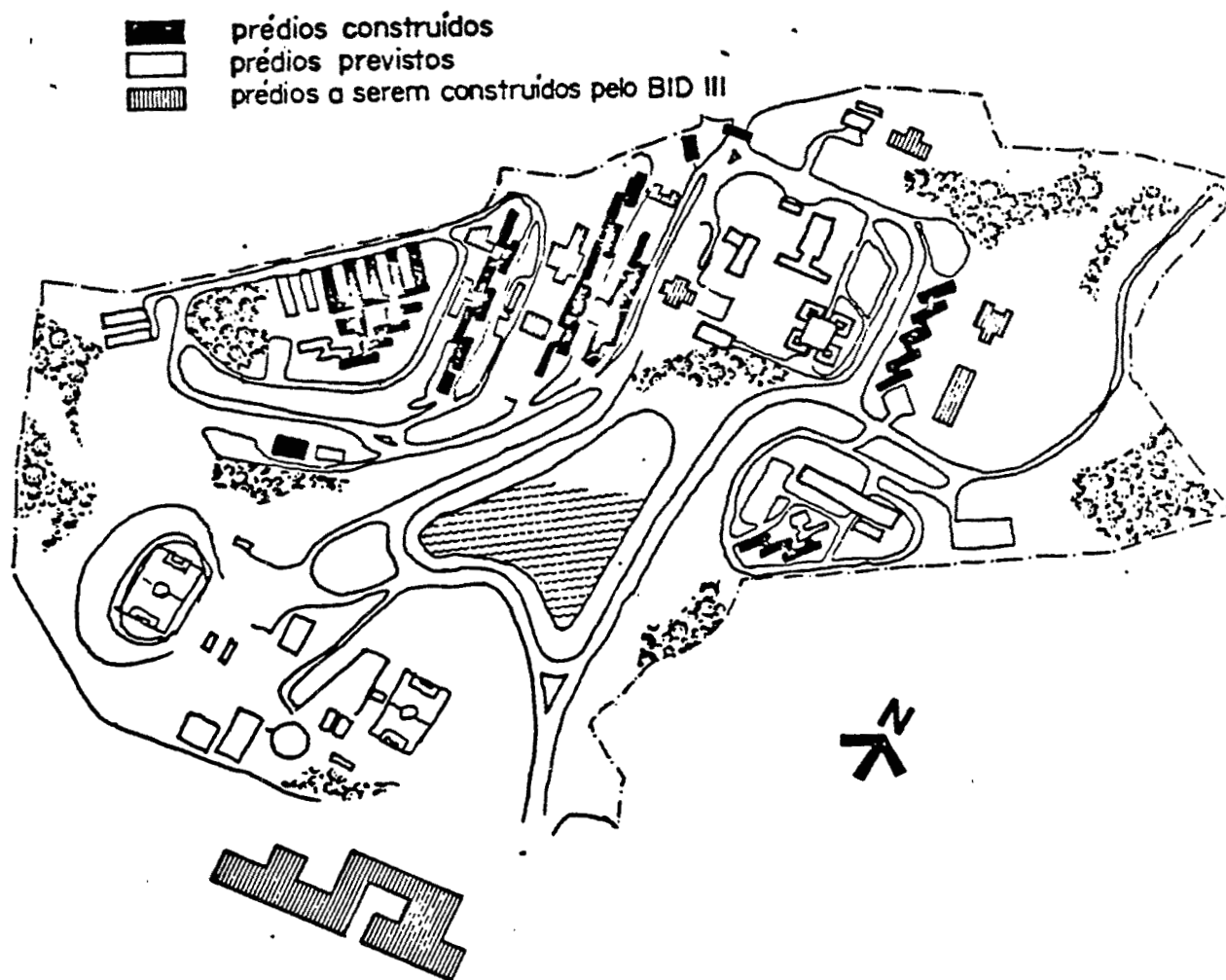
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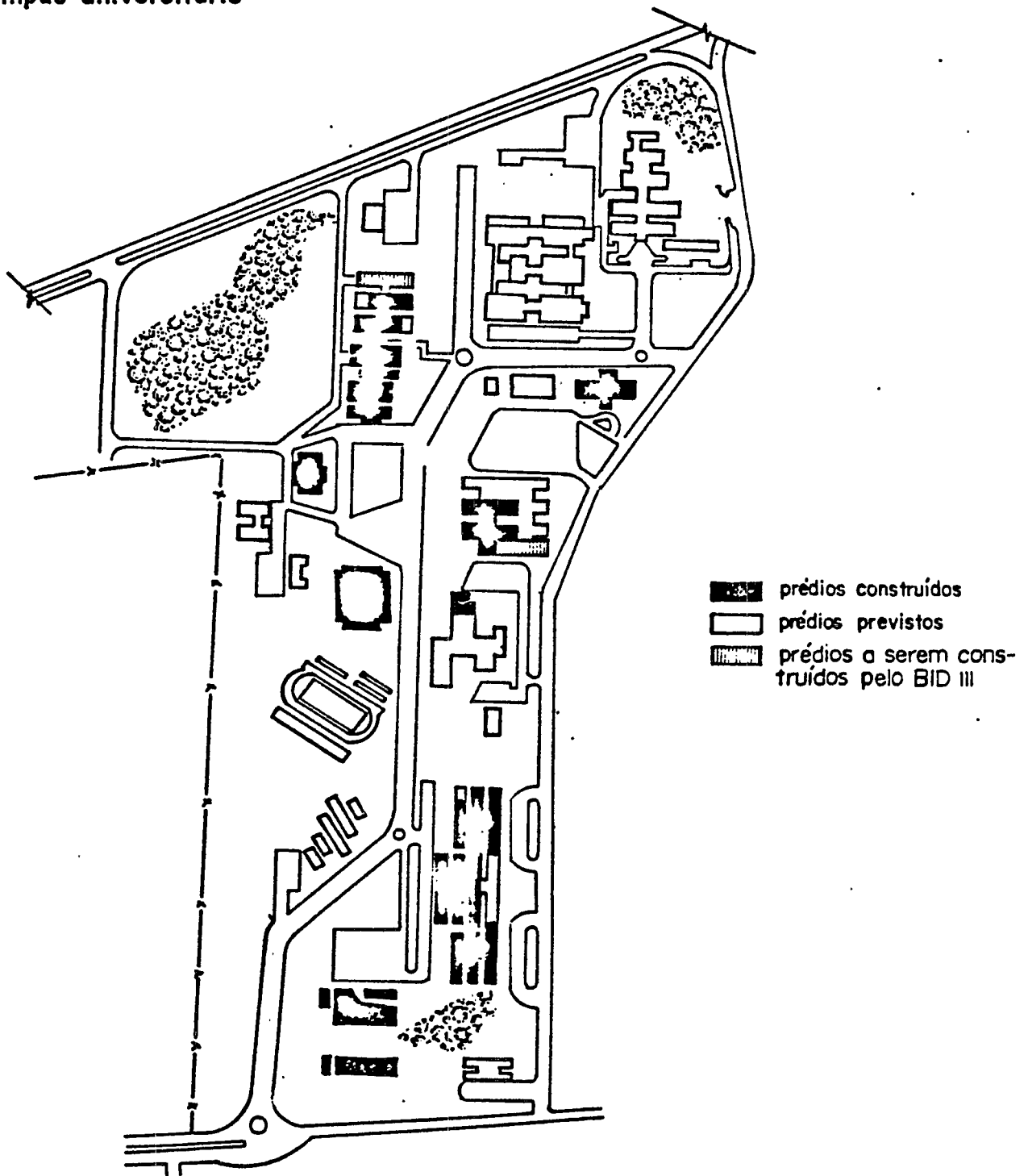
campus a. c. simões

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 prédios a serem projetados e construídos pelo BID III  
 prédios construídos

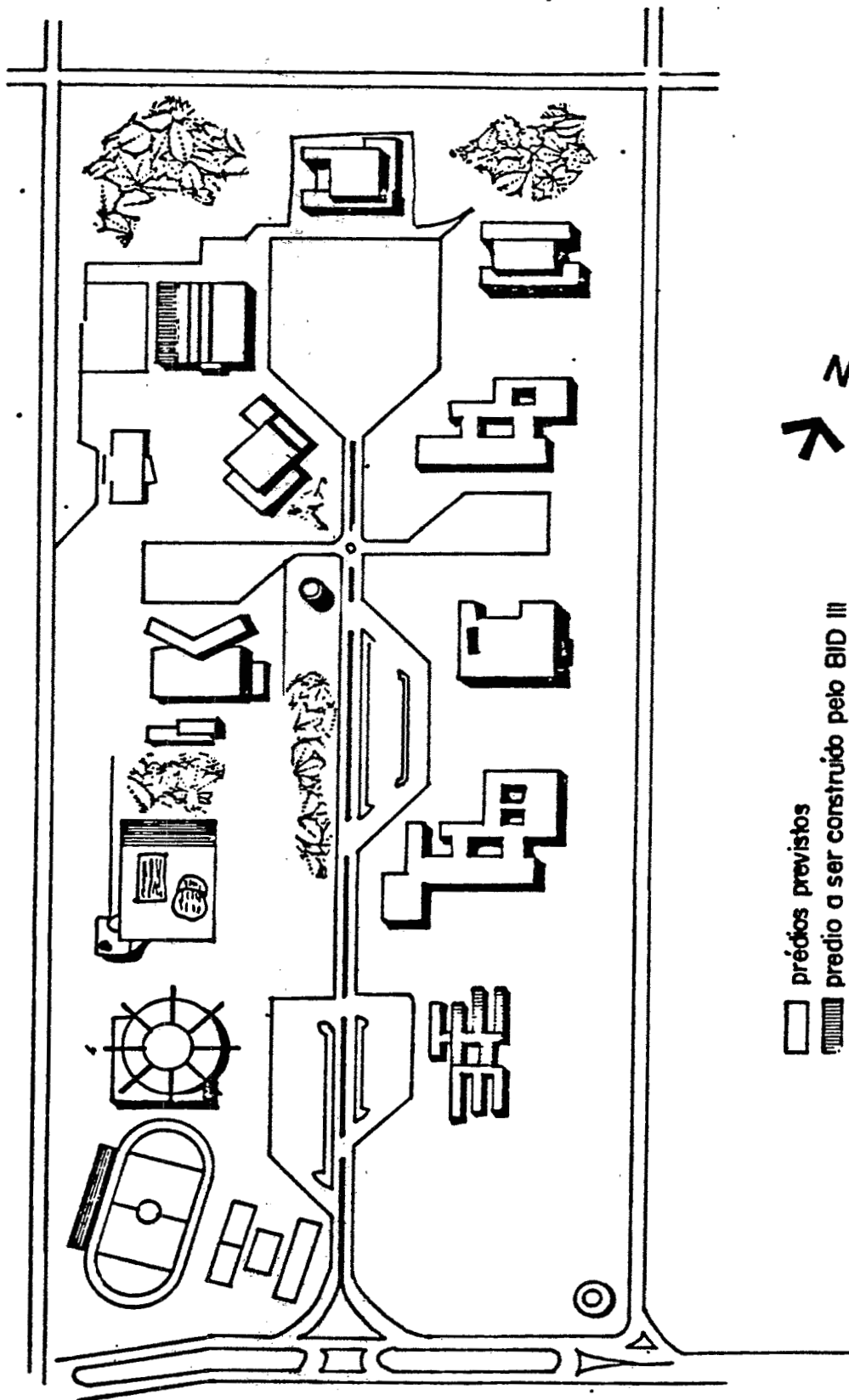
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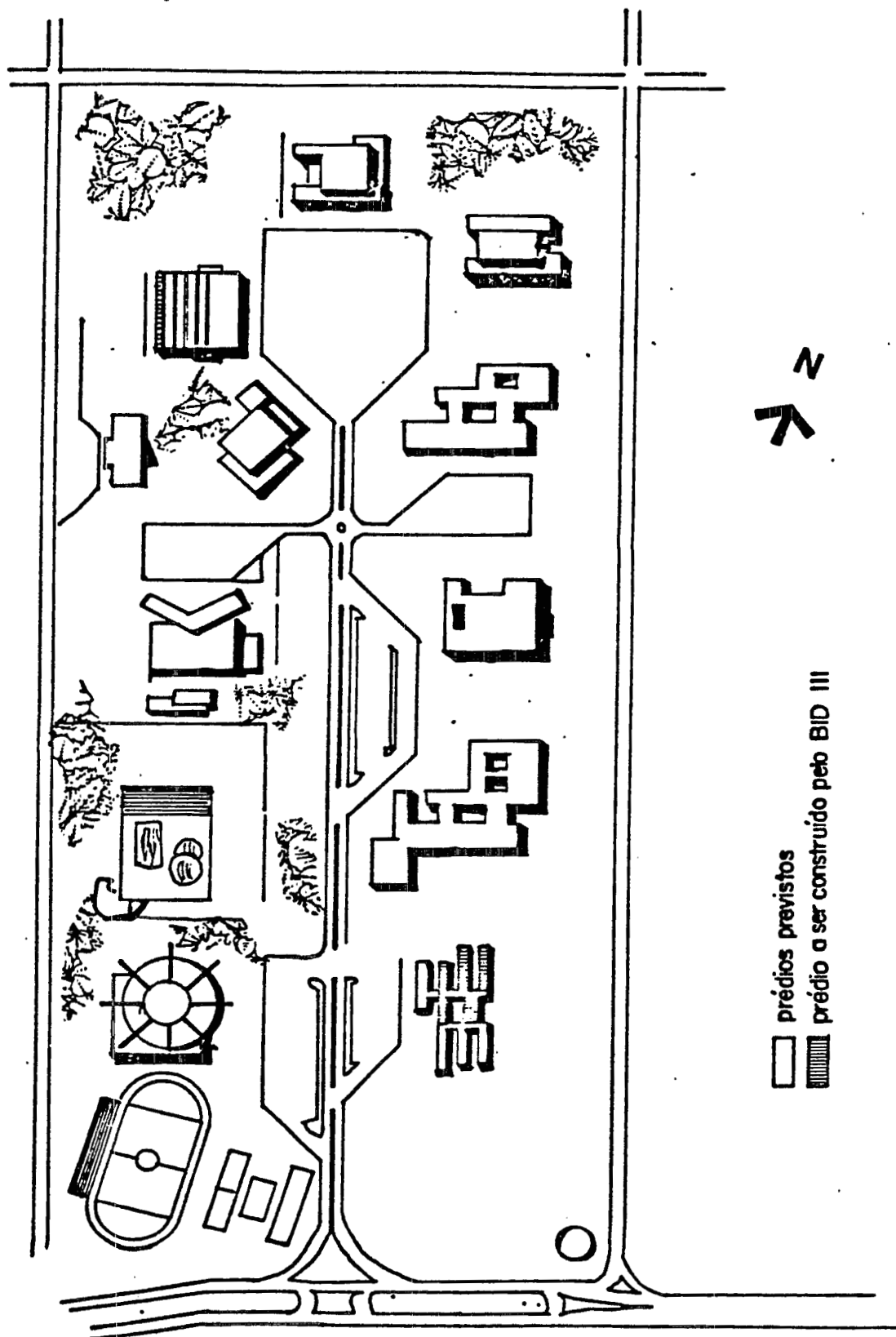
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

campus  
barra do garças

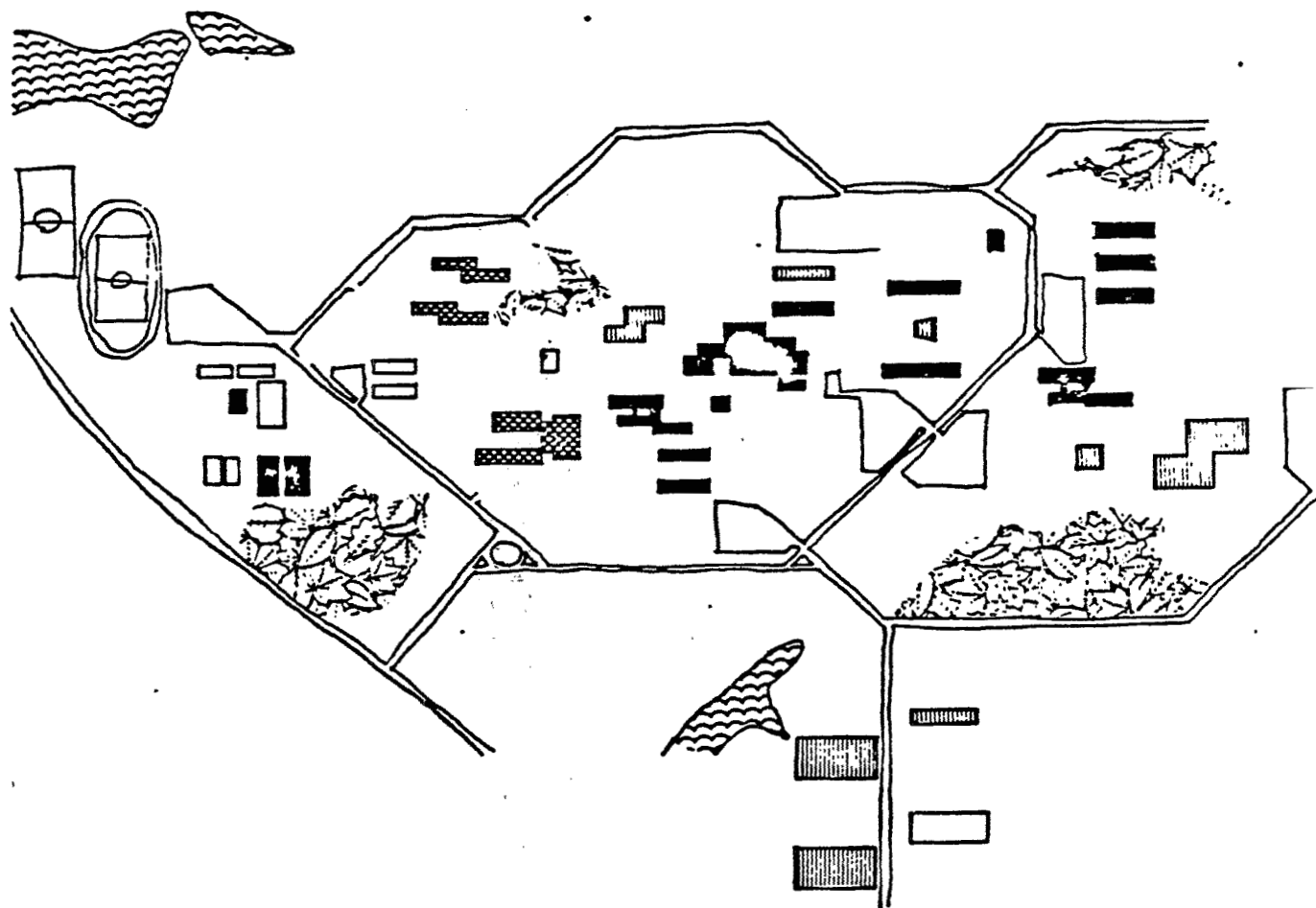


campus  
rondonópolis



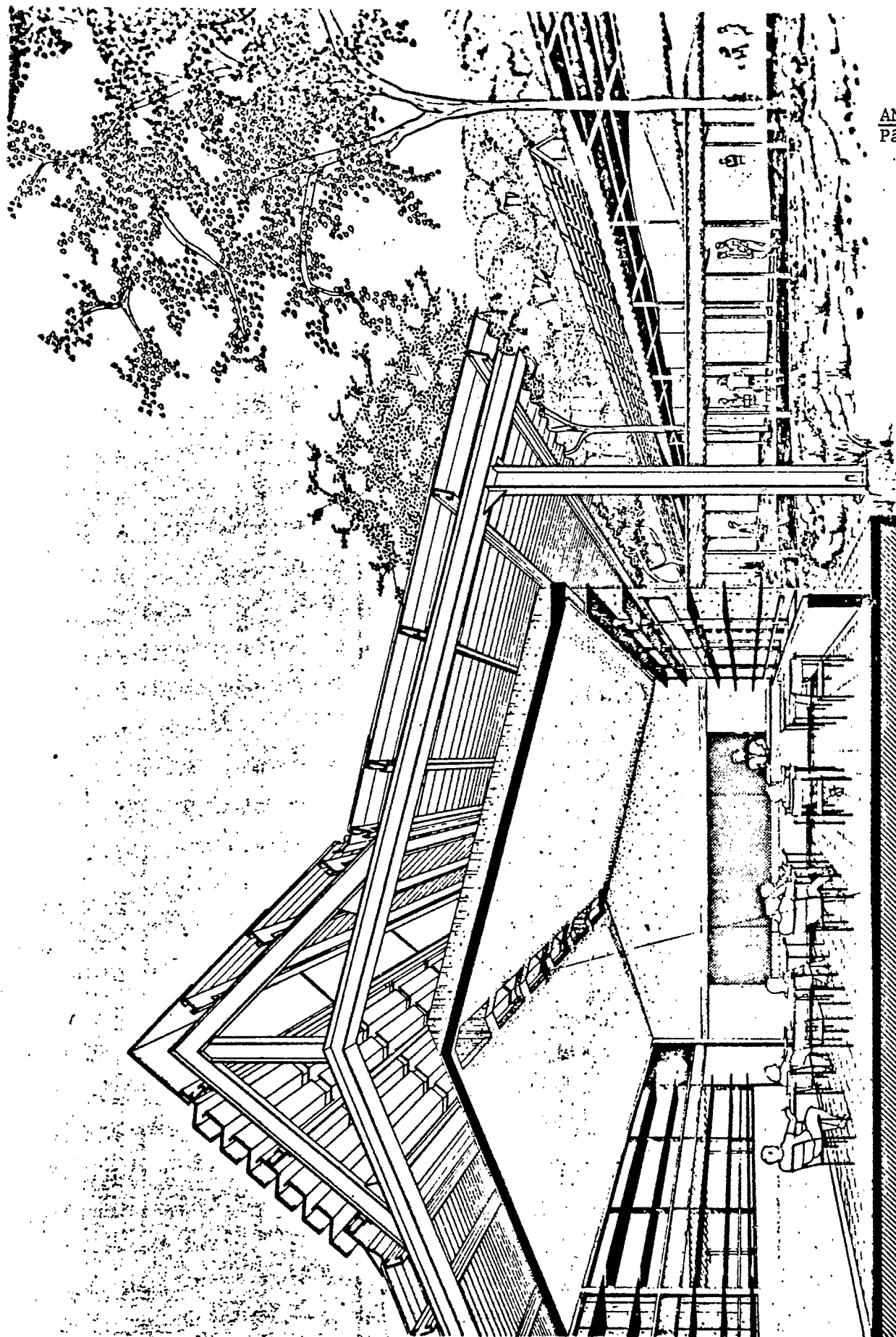
campus universitário

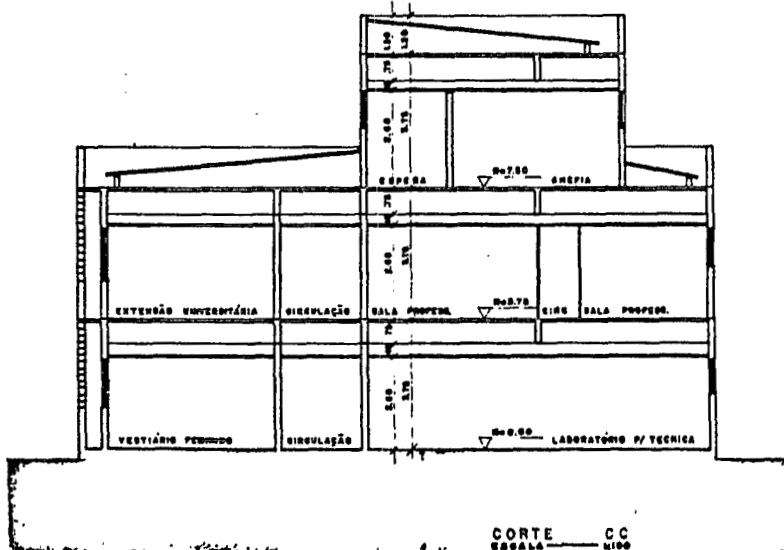
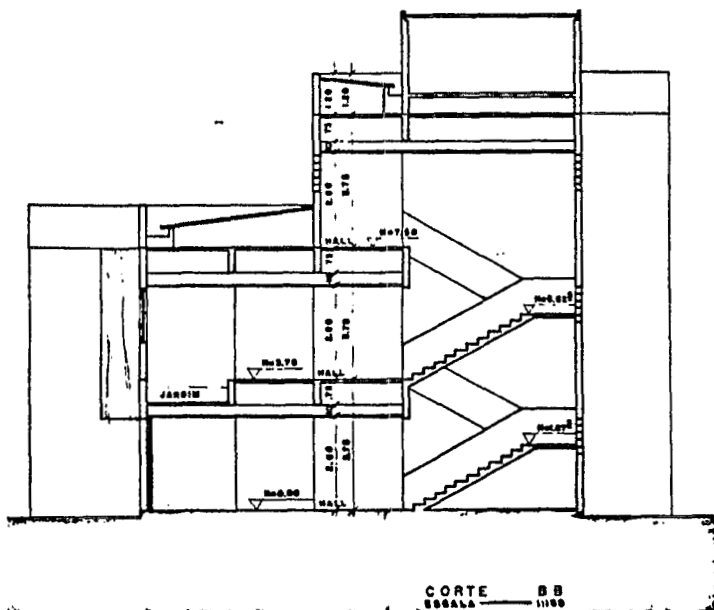
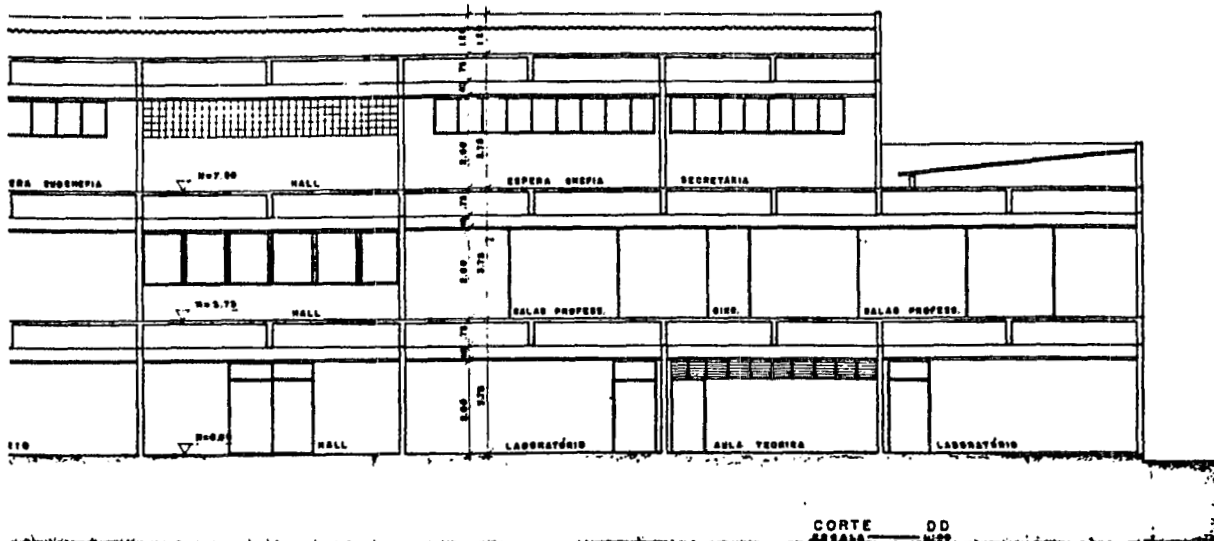
-  prédios construídos
-  prédios em execução
-  prédios previstos
-  prédios a serem construídos pelo BID III



DETALLES DISEÑOS UNIVERSIDADES PARTICIPANTES







<p><b>escritório técnico responsável</b></p> <p><small>(nome/residência/telefone/assinatura/assinatura do responsável técnico/assinatura do responsável técnico)</small></p> <p><b>DEPARTAMENTO DE OBRAS E PROJETOS</b></p> <p><b>DIRETOR: GENALDO RODRIGUES DIAS - END. 1010 - 0.00</b></p>	<p><b>responsáveis técnicos</b></p> <table border="1"> <thead> <tr> <th>nome</th> <th>função</th> <th>data</th> </tr> </thead> <tbody> <tr> <td>UPB MARIA DO ROSÁRIO SOUZA VELOSO</td> <td>projetista</td> <td>2000-09-01</td> </tr> </tbody> </table>	nome	função	data	UPB MARIA DO ROSÁRIO SOUZA VELOSO	projetista	2000-09-01	<table border="1"> <tr> <td>ESTADO DO CEARÁ</td> <td>UNIVERSIDADE FEDERAL DO CEARÁ</td> <td>FORTALEZA PORANGABA</td> </tr> <tr> <td>CURSO DE ENFERMAGEM</td> <td>ARQUITETURA</td> <td>DESENHO TÉCNICO</td> </tr> <tr> <td>PROFESSOR</td> <td>PRIMEIRA</td> <td>PROFESSOR</td> </tr> </table>	ESTADO DO CEARÁ	UNIVERSIDADE FEDERAL DO CEARÁ	FORTALEZA PORANGABA	CURSO DE ENFERMAGEM	ARQUITETURA	DESENHO TÉCNICO	PROFESSOR	PRIMEIRA	PROFESSOR
nome	função	data															
UPB MARIA DO ROSÁRIO SOUZA VELOSO	projetista	2000-09-01															
ESTADO DO CEARÁ	UNIVERSIDADE FEDERAL DO CEARÁ	FORTALEZA PORANGABA															
CURSO DE ENFERMAGEM	ARQUITETURA	DESENHO TÉCNICO															
PROFESSOR	PRIMEIRA	PROFESSOR															





C E D A T EINSTRUCTIVO TECNICO DE ACOMPAÑAMIENTO FINANCIERO

## I. INTRODUCCION

El Director General del Centro de Desarrollo y Apoyo Técnico a la Educación (CEDATE), en uso de las atribuciones y cumpliendo con los objetivos de este organismo establece este Instructivo Técnico con respecto al acompañamiento financiero de los recursos convenidos entre este Centro y los Agentes Ejecutores para la ejecución del Programa MEC/BID-III.

## II. OBJETIVO

El presente Instructivo Técnico tiene por finalidad establecer criterios y procedimientos para el acompañamiento financiero de los convenios entre este organismo y los agentes ejecutores.

## III. ATRIBUCIONES

Buscando una aplicación racional de los recursos y facilitar el acompañamiento de la ejecución, los Agentes Ejecutores designarán técnicos en el área financiera que tendrá como mínimo las siguientes responsabilidades:

1. Acompañar y registrar la ejecución presupuestaria y financiera de los recursos.
2. Mantener toda la documentación financiera actualizada.
3. Mantener actualizado el presupuesto y/o el Plan de Aplicación de Recursos.
4. Elaborar y enviar a CEDATE una justificación de la aplicación de recursos.
5. Garantizar el cumplimiento de este Instructivo Técnico en la ejecución del convenio correspondiente.

Los técnicos responsables por el acompañamiento presupuestario y financiero en CEDATE tendrán las siguientes responsabilidades:

1. Compatibilizar el Plan de Cuentas.
2. Analizar y aprobar las justificaciones de aplicación de recursos de los agentes ejecutores.
3. Registrar y elaborar justificaciones financieras consolidadas de la aplicación de los recursos desembolsados.
4. Prestar el asesoramiento técnico requerido por los agentes ejecutores.
5. Elaborar la Presentación de Cuentas, Solicitud de Desembolsos, Solicitud

de reembolso, y cuando sea del caso, conjuntamente con los agentes ejecutores.

6. Compatibilizar la programación financiera prevista en el Plan de Aplicación de Recursos.
7. Enviar el la Justificación de Acompañamiento Financiero Consolidada a los agentes ejecutores.
8. Velar por el cumplimiento de este Instructivo Técnico.

#### IV. LA SOLICITUD DE DESEMBOLSO

La solicitud de desembolso de recursos referente a la parte solicitada por el agente ejecutor deberá ser realizada inicialmente en dos etapas, conforme a un cronograma previamente aprobado por CEDATE y a través de los formularios de solicitud de desembolso elaborados por CEDATE.

La liberación de recursos a los agentes ejecutores, además de las condiciones previstas en los convenios correspondientes estará sujeta a cumplimiento de los siguientes aspectos:

1. Presentación de los documentos y elementos técnicos necesarios.
2. Aprobación técnica, formalizada a ser emitida por los técnicos correspondientes de CEDATE.
3. Presentación de una Justificación de Aplicación de recursos y la debida aprobación por las unidades competentes de CEDATE, cuando se trate de partes subsiguientes a la primera solicitud.

Los recursos serán liberados por CEDATE, después de la firma del convenio CEDATE/AGENTE EJECUTOR, de acuerdo con las condiciones establecidas en los items anteriores.

#### V. JUSTIFICACION DE LA APLICACION DE RECURSOS

El Agente Ejecutor deberá presentar mensualmente, y dentro de los primeros 10 días del mes siguiente una Justificación de la Aplicación de Recursos.

Todos los documentos presentados correspondientes a la Justificación deberán ser identificados con el nombre del Agente Ejecutor y el número del Convenio, la finalidad del mismo y el ejercicio al cual se refiere dicha justificación.

CEDATE se reserva el derecho de solicitar informaciones y/o aclaraciones adicionales.

La tramitación de la documentación deberá ser realizada a través de oficio del Director de la Unidad Ejecutora al Director General de CEDATE.

#### VI. CONTROL FINANCIERO

El Agente Ejecutor deberá mantener registros específicos de la ejecución

presupuestaria y financiera pertinente al convenio, demostrando los valores recibidos y los pagos en la moneda original.

El Agente Ejecutor deberá mantener cuentas bancarias específicas para la movilización de recursos, cuando así fuere solicitado en el correspondiente convenio.

#### VII. DISPOSICIONES GENERALES

Las normas y procedimientos establecidos en este Instructivo Técnico no eximen al Agente Ejecutor de los controles y las normas contables y financieras establecidas por la Secretaría de Control Interno - CISET/MEC, el Tribunal de Cuentas de la Unión - TCU y las demás disposiciones legales vigentes.

El saldo financiero en poder del Agente Ejecutor que no fuere utilizado al final de la ejecución del Proyecto, deberá ser reembolsado de acuerdo con la orientación que al respecto daría CEDATE.

Los documentos de comprobación de desembolsos y gastos deberá ser mantenidos en los archivos del Agente Ejecutor.

CEDATE se reserva el derecho de, en cualquier momento verificar en sitio, la documentación original comprobatoria de los gastos realizados a cuenta de los recursos concedidos en los desembolsos.

En casos de dudas u omisiones, éstas serán resueltas por la Dirección General de CEDATE.

BRAZIL. Basic Statistics for Universities in the Sample 1981

	<u>Fluminense</u>	<u>Ceará</u>	<u>Amazonas</u>	<u>Goiás</u>
Operations Costs US\$000	50.830.0	36.365.0	28.648.0	33.261.0
Constructed area m <sup>2</sup>	135.984.0	218.700.0	41.880.0	131.160.0
Faculty Total	2.038.0	1.303.0	769.0	1.098.0
Administration	3.177.0	2.020.0	1.044.0	2.059.0
Students	21.241.0	15.023.0	7.147.0	8.069.0
Graduations	1.804.0	1.670.0	863.0	648.0
Places Offered	2.610.0	2.445.0	1.515.0	1.785.0
Student Faculty (PETI)	12.3	14.6	12.4	10.0
Student Administrator	6.8	7.4	6.8	3.9
Cost per student (US\$)	2.393.0	2.420.0	4.008.0	4.122.0
Cost per teacher (US\$)	30.077.0	45.582.0	45.401.0	31.647.0
Cost per graduate (US\$)	28.176.0	21.775.0	33.196.0	51.329.0
Cost per m <sup>2</sup>	373.8	166.3	684.0	253.6
Cost per place offered (US\$)	19.475.0	14.873.0	18.909.0	18.634.0
Applicants/place	7.3	10.3	10.0	9.1
Graduates per student (%)	8.5	11.1	12.0	8.0

SOURCE: IDB, Project Analysis Department

Based on statistical Tables published by each university.



## BRAZIL: Basic Statistics for four selected Universities. 1979

	<u>Brasilia</u>	<u>Federal do Rio de Janeiro</u>	<u>Vicosa</u>	<u>Sao Paulo</u>
Students	7,011	24,976	5,466	25,745
Faculty	715	2,678	484	1,727
Places Offered	1,147	4,265	1,000	6,268
Area m <sup>2</sup>	213,509	639,360	171,461	-
Cost US\$1000 <u>1/</u>	52,961	105,976	37,056	189,968
Applicants	11,099	45,715	4,608	95,738
Graduates	1,318	4,149	522	4,799
Students/Faculty	9.8	9.3	11.3	14.9
Applicants per place	9.7	10.7	4.6	15.3
Cost per Faculty US\$	74,071	39,573	76,562	110,000
Cost per Student US\$	7,554	4,243	6,779	7,379
Graduates per student %	8.8	16.6	9.5	18.6

---

1/ Current expenditures during the year.

Brazil: Higher Education, Number of Students by Region and Field of Study, 1979

Field of Study	Brazil		North		Northeast		Southeast		South		Mid-West	
		%		%		%		%		%		%
Exact Sciences and Technology	278,167	21.4	5,285	18.3	40,351	19.0	180,426	22.8	44,864	21.9	7,241	11.6
Biological Sciences and Health Professions	158,970	12.2	5,941	20.5	31,186	14.7	90,311	11.4	25,485	12.5	6,047	9.6
Agricultural Sciences	34,892	2.7	1,328	4.6	9,202	4.3	13,801	1.7	8,684	4.2	1,877	3.0
Social Sciences and Humanities	724,565	55.8	15,033	51.9	112,543	53.2	446,480	56.4	108,580	53.1	41,929	69.6
Letters	77,341	6.0	1,281	4.4	15,838	7.5	44,437	5.6	12,482	6.1	3,303	5.2
Arts	23,986	1.9	77	.3	2,736	1.3	16,082	2.1	4,297	2.2	794	1.2
Total	1,297,921	100.0	28,945	100.0	211,856	100.0	791,537	100.0	204,392	100.0	61,191	100.0

Source: IDB, Project Analysis Department. Based on MEC/SESu, Boletim Informativo - March, 1982.

Brazil: Index of Real Output by Sector  
1970 - 1980

	<u>Total</u>	<u>Agriculture</u>	<u>Industry</u>	<u>Commerce</u>	<u>Transport and Communications</u>
1970	100.0	100.0	100.0	100.0	100.0
1971	113.3	111.4	114.3	114.1	107.4
1972	126.6	116.0	129.6	128.6	120.2
1973	144.2	120.1	150.1	147.6	140.8
1974	158.3	130.3	164.9	161.3	158.7
1975	167.3	134.7	175.2	166.9	177.4
1976	182.3	140.3	193.9	181.4	190.6
1977	190.8	153.8	201.4	187.7	198.4
1978	202.3	151.2	217.8	198.8	211.9
1979	215.3	156.1	232.7	211.4	233.4
1980	232.5	166.7	251.2	226.6	263.1

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Variable Cost Increase, Labor Productivity Impact and

Project Feasibility

The following is a simple model to determine the benefits that must be realized as a function of operating costs and investment per student for the project to be economically feasible. It is assumed that the university has the following simplified configuration of costs and benefits

<u>Year</u>	<u>Description</u>	<u>Benefits</u>	<u>Costs</u>
0	Investment Starts	-	$I_0$
1	Execution	-	$I_1 + c.s$
2	Execution/Start of impact	-	$I_2 + c.s$
3	End of Execution	-	$I_3 + c.s$
4		-	$\Delta c.s$
5		-	$\Delta c.s$
6	First year of benefits	$\Delta p.g$	$\Delta c.s$
7		$2.\Delta p.g$	$\Delta c.s$
.....			
19	Fourteenth year of benefits	$14.\Delta p.g$	$\Delta c.s$
20	End of project impact	$15.\Delta p.g$	$\Delta c.s$
21	Sixteenth per year of benefits	$15.\Delta p.g$	-
.....			
30	End of impact on productivity	$15.\Delta p.g$	-

$$\text{Net Present Value} = \sum_{i=6}^{20} \frac{\Delta i. p.g}{(1.12)^i} + \sum_{i=21}^{30} \frac{15.\Delta p.g}{(1.12)^i} - \sum_{i=1}^{20} \frac{\Delta c.s}{(1.12)^i} - \sum_{i=1}^4 \frac{I_i}{(1.12)^i}$$

Where:  $\Delta p$  = increase in average productivity of professionals  
 $g$  = graduates per year  
 $I$  = investment  
 $\Delta c$  = increase in operating cost of the university per student  
 $s$  = number of students

Calculating the summations and simplifying, this expression is equal to:

$$NFV = 51.19 \Delta p.g - 7.5 \Delta c.s - I$$

Where  $I$  is the present value of the flow of investments  $I_i$ .

The above expression indicates that for the benefits to just cover operating cost, i.e.: for

$$51.19 \Delta p.g = 7.5 \Delta c.s$$

One must have,

$$\frac{\Delta p.g}{\Delta c.s} = \frac{7.5}{51.19}$$

and if,  $g/s = .20$

then,

$$\frac{\Delta p}{\Delta c} = .7325$$

That is, the increase in labor productivity of a graduate must be at least 73% of the increase in operation cost per student.

Furthermore, for the benefits to cover the investment cost,

$$\frac{I}{S} = 51.19 \Delta p \frac{g}{s} - 7.5 \Delta c.$$

Again, assuming that  $g/s = .20$ ,  $I/S$  should be no higher than

$$\frac{I}{S} = 10.238 \Delta p - 7.5 \Delta c,$$

or alternatively,  $\Delta p$  and  $\Delta c$  should be such that the above expression is satisfied for the project to have a 12% rate of return.

BRAZIL: Federal Universities Development Program  
Salary Differentials and the Quality of Education

Observed wage differentials even when narrowly defined within one occupational category depend on several factors, which may not be statistically identified and isolated unless there is a considerably large amount of relevant data. There is a substantial amount of evidence, however, to confirm that education is a significant variable in the explanation of earning differentials.

From the point of view of a private employer, there is little doubt that productivity will have to at least match labor costs, and that the quality of training or education will be closely reflected on the level of productivity.

In order to provide an estimate of this impact, a sample of professionals was taken which relates their actual salaries with the quality of the university and program from which they graduated. The latter were classified into two somewhat subjective categories according to the reputation of the institution. There was no problem in reaching the consensus of at least three professionals when asked to classify a given institution and program into: A: excellent or above average, and B: definitely below average. Of 75 observations, 54 were clearly ranked into A or B. These are shown below and in

Table 1

Sample of Professional Salaries by Quality Category of University  
and Program, in Four Cities (August 1982)

(minimum salaries: ms)

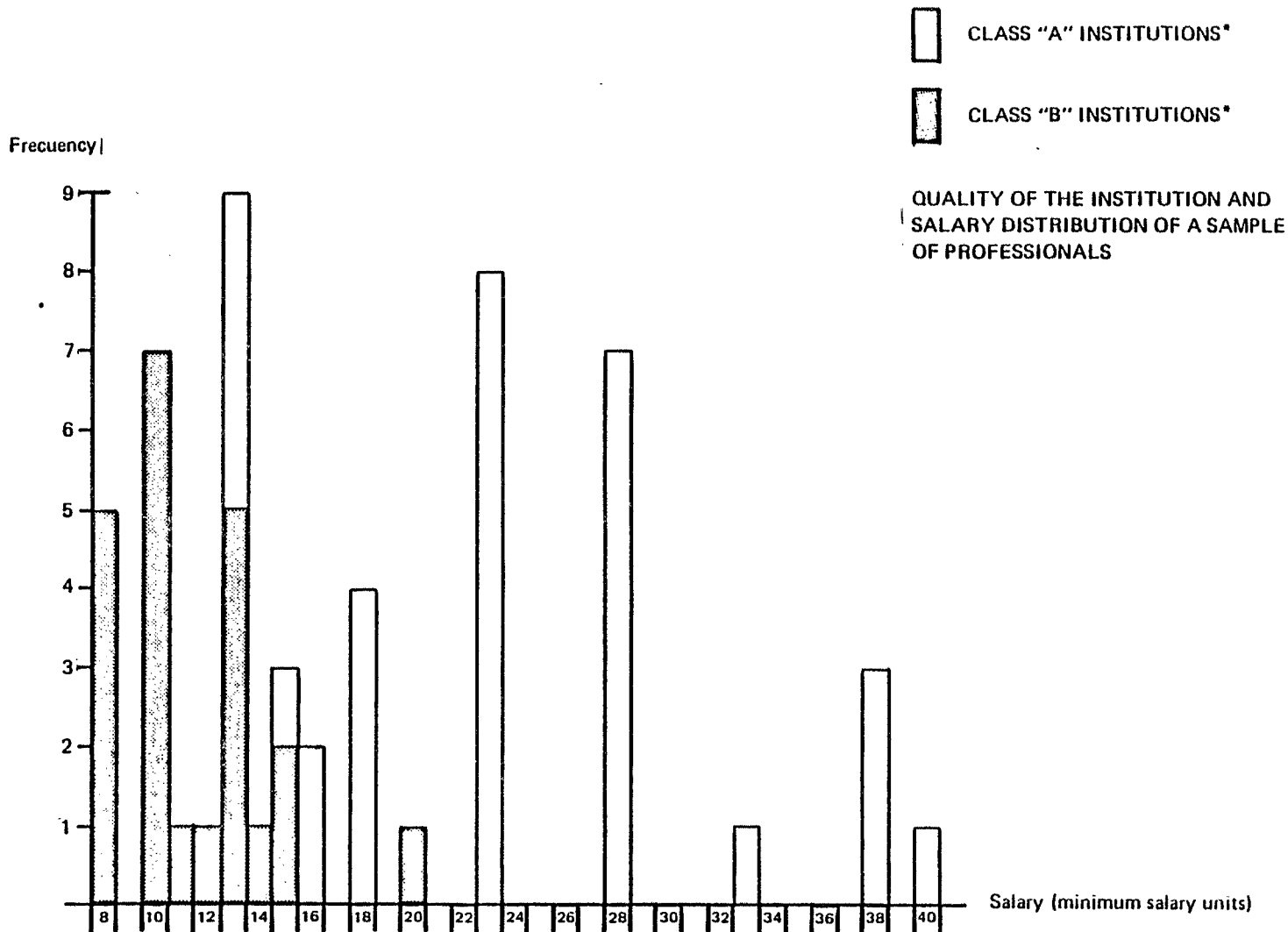
	<u>Brasilia</u>	<u>Manaus</u>	<u>Fortaleza</u>	<u>Niteroi</u>
1	28.0 A	40.0 A	38.0 A	38.0 A
2	28.0 A	33.3 A	38.0 A	28.0 A
3	18.0 A	23.3 A	28.0 A	28.0 A
4	13.3 A	23.3 A	28.0 A	28.0 A
5	13.3 A	23.3 A	23.3 A	23.3 A
6	13.3 B	23.3 A	18.0 A	23.3 A
7	13.3 B	18.0 A	16.6 A	23.3 A
8	10.0 B	18.0 A	15.0 A	16.6 A
9	10.0 B	15.0 B	13.3 A	13.3 A
10	8.0 B	14.0 B	20.0 B	13.3 B
11	10.0 B	12.0 B	15.0 B	13.3 B
12		10.0 B	13.3 B	10.0 B
13		8.0 B	11.0 B	10.0 B
14		8.0 B	10.0 B	8.0 B
15		8.0 B		

The average salary for professionals from A-type programs was 23.97 ms while for B-type programs was 11.46 ms, a differential of approximately 12 ms 1/.

While the size of the sample does not permit making a conclusive statement about the impact of the quality of education on wages, it is nonetheless significant, as the observations have been homogenized to include only graduates in engineering, administration and economics who do not hold management positions and do not have graduate degrees. The differential of 12 ms. is the equivalent of US\$12,000 per year, a reasonable figure for the present conditions of the labor market in Brasil.

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1/ Standard deviations are 7.83 for group A and 2.99 for group B.



\* The institutions and programs from which professionals in the sample graduated, were classified as type A or B according to the unanimous opinion of at least three professionals in the same field.

SOURCE: Sample taken during the Analysis Mission (August 1982)