

NATIONAL COUNCIL OF UNIVERSITY RECTORS
OFFICE OF HIGHER EDUCATION PLANNING

Committee of University Vice-Rectors for Research

348.428.6
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POSITION PAPER AND PROPOSAL OF STATE UNIVERSITIES
FOR THE COSTA RICA-HOLLAND AGREEMENT



ESTA OBRA ES PROPIEDAD DE LA
BIBLIOTECA DEL
CONSEJO NACIONAL DE RECTORES
ACTIVO NUMERO: 14375

August, 1993

The present document is the result of the analysis of each of the Costa Rican state universities, as well as their collective reflection as a group. The formulation of terms of reference for its elaboration, the discussion and the correction of the drafts was carried out by the commission made up by the Vice-Rectors for Research of the four universities, formed by Dr. Carlos Quesada (UCR), Engineer Walter Bolaños (ITCR), Ana Lorena San Roman M.S. (UNA) and Dr. Daniel Camacho (UNED). The coordination of the technical work was the responsibility of Engineer Sonia Rojas. The synthesis and final editing of this document was made by Juan Carlos Cruz Barrientos. We appreciate the secretarial work of Mrs. Patricia Chacon from the Coordination Division of OPES.

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EXECUTIVE SUMMARY

The four state universities of Costa Rica, grouped in the National Rectors Council (CONARE) fully accept the AID REPORT prepared by the delegations of Costa Rica and Holland in March, 1993.

After a process of reflection which involved several individuals from the universities, the state universities offer the present document in an effort to elaborate on the aforementioned report.

The Costa Rican state universities are recipients of a scientific development that dates back 150 years in an ascending and cumulative process. They all smoothly work together under the coordination of the National Rectors Council. The Costa Rican state universities are firmly embedded in society at the present time.

This has allowed the state universities to overcome the global crisis which the country and continent suffer as well as to reaffirm their leadership.

THE COSTA RICAN
PUBLIC STATE
UNIVERSITIES
SUPPORT THE AID
REPORT OF THE FIRST
JOINED COSTA RICA-
HOLLAND MEETING.

THE COSTA RICAN
PUBLIC STATE
UNIVERSITIES
PRESENT A
SIGNIFICANT
HUMANISTIC,
SCIENTIFIC, AND
TECHNOLOGICAL
DEVELOPMENT AND ARE
DEEPLY ROOTED IN
THE SOCIETY.

In spite of efforts made by Costa Rican society, there is an environmental degradation marked by declining forests and the loss of natural mineral, marine, fauna, tourist and hydrographic resources. Causes of these problems include low public awareness, inadequate legislation, a development model based on the overexploitation of natural resources, scarce availability of information, and the absence of environmental ethics among the population.

THERE IS AN
ALARMING
DEGRADATION OF THE
ENVIRONMENT IN
COSTA RICA.

This situation implies enormous challenges for Costa Rican society if they hope to guarantee the quality of life for an increasing population. Among the challenges are the generation of infrastructure, production of technical sectors, access to arable land, generation of new jobs, opening of new markets, habitat management, development of sectorial plans, integrated management of natural resources, generation and dissemination of new knowledge and the adoption of new ethical values.

THIS PROBLEM
CONFRONTS THE COSTA
RICAN SOCIETY WITH
BIG CHALLENGES FOR
WHICH THE PUBLIC
UNIVERSITIES
REPRESENT A
FUNDAMENTAL PILLAR.

The Costa Rican state universities are the principal agents capable of addressing the above-stated challenges.

State universities have the potential to confront the challenge presented by environmental destruction.

Their contributions are reflected by development of scientific and technical sectors with a humanistic concept, their intellectual vanguard character, their close relationship with all the social sectors and strata of society, their international contacts that allow the internal flow of universal knowledge, their close contacts with neighboring Central American and Caribbean countries, the participation of their professors in government, their relationships with the private sector and Non Gubernmental Organizations (NGO), their topical diversity, their wide sectoral and territorial distribution, their important role in social mobility, and their developed capacity for research.

THE COSTA RICAN PUBLIC STATE UNIVERSITIES HAVE THE POTENTIAL TO FACE THE CHALLENGE OF SUSTAINABLE DEVELOPMENT THANKS TO THEIR STRENGTH, DEVELOPMENT LINKAGES TO THE SOCIETY, AND THEIR STABILITY.

Therefore, the Costa Rican state universities have tremendous long range growth potential. Thanks to their great stability and political maturity they are permanent active forces capable of effectively promoting sustainable development.

The previous considerations demonstrate that the Costa Rican state universities have the capacity to carry out a vigorous joint program with Dutch universities and public and private entities in Costa Rican society to address sustainable development.

BASED ON THE AFOREMENTIONED, A PROPOSAL IS PRESENTED FOR JOINED WORK WITH DUTCH UNIVERSITIES AND PUBLIC AND PRIVATE COSTA RICAN ENTITIES IN ORDER TO ACHIEVE SUSTAINABLE DEVELOPMENT.

This document also presents a detailed description of each of the universities and of the areas of interest which they might undertake according to their potential.

The annexes include maps showing the physical infrastrucre, summaries of the study programs and research at each of the state universities and other quantitative information of interest.

THIS DOCUMENT AND
ITS ANNEXES PRESENT
A DESCRIPTION OF
EACH UNIVERSITY AND
THE AREAS OF
CONCERN FOR THE
AGREEMENT COSTA
RICA-HOLLAND.

PREFACE

This document represents the contribution and the commitment of the state universities to the sustained development of our nation, within the framework of possibilities opened by the Costa Rica-Holland agreement. A preliminary letter of agreement was signed by Costa Rica and Holland as a result of the United Nations Conference for the Environment and Development (UNCED/ECO 92), held in Rio de Janeiro in June, 1992.

As a starting point, the four Costa Rican state universities have fully accepted all the statements expressed in the proceedings of the discussion meeting to define the agreement, a report issued after the first meeting held by the delegations of both countries in San José, Costa Rica, between March, 22 and April, 1 1993.

This agreement is taken as a first step in the formulation of an approach to sustained development within a new scope of North-South cooperation and based on equality, mutual respect, reciprocity, and broad participation of all sectors of society.

For the state Universities this document represents a first step towards a comprehensive and global perspective of both an environmental agenda for the country and the urgent tasks that science and technology must carry out for the sustained development of Costa Rica.

To formulate this new perspective, the four institutions of higher education underwent a process of self-reflection, prepared documents, and held several interinstitutional discussion meetings, a seminar that gathered representatives of the four universities, and several work sessions of the Committee of University Vice-Rectors.

In order to direct their contribution within the agreement, the four state universities decided to benefit from the coordination and planning mechanisms set by the National Council of University Rectors (CONARE), through the Executive Secretariat, The Office of Higher Education Planning (OPES).

1. Introduction

The State Higher Education of Costa Rica stands among the most academically developed and socially rooted systems in Latin America. It has a privileged position in terms of its capacity to generate and transfer knowledge while, at the same time, it is the country's main agent of change and social mobility.

Costa Rican higher education, the result of 150 years of academic experience, has contributed to build the civilian tradition, the increase of agricultural and industrial production, and it has played a key role in the most important improvements in the fields of health, infrastructure development, and in the most significant achievements resulting from scientific and technological development.

Several events between 1840 and 1870 mark the beginning of the developmental process that higher education would undergo, among which are the foundation of Universidad de Santo Tomas, the organization of the national educational system, and the arrival of foreign visitors and scientists, mostly European and some of them as immigrants, whose expertise enriched Costa Rica.

By the end of the 19th century, these facts united to bring about the development of the first institutions of scientific and technological importance. An important contribution to this development is found in the 1887 radical reformation of the educational system, which included a new Act of Education, modified the teaching methods and curricula, and promoted the arrival of a new generation of European teachers to reinforce and improve high school education.

Thus, the country started the process of development for scientific fields and research through the creation of the first research centers, including the Physical and Geographical Institute and the National Observatory, the foundation of the National Museum, the schools of Law and Pharmacy as an extension of the Universidad de Santo Tomás. The National School of Agriculture and the Teachers College were created later, in 1926.

When the Universidad de Costa Rica (UCR) was created in 1940, the previous educational achievements were consolidated, and a period of wide development of national scientific and technological activity started. The University Reform Act of 1957 resulted in the improved teaching of science. A group of foreign professors were brought to strengthen basic general education courses, and a group of Costa Ricans were sent abroad to pursue higher academic instruction.

The efforts made to improve the national scientific-technological allotment show some results in the 70s. They were evident in a sustained economic growth partially related to industrial development and the improvement of agricultural activities.

Within this acknowledgement of the value of science and technology for development, three new centers of higher education were created between 1970 and 1975: the Instituto Tecnológico de Costa Rica, the Universidad Nacional, built upon the solid foundations of the Teachers Colleges and the Universidad Estatal a Distancia.

At the same time, several Costa Ricans saw the need for an institution that, along with the universities, would promote the development of research in science and technology and the development of human resources. Thus, in 1972 the National Council for Scientific and Technological Research (CONICIT) was created.

On December 4, 1974, the Agreement for the Coordination of Higher Education was signed. This agreement created the National Council of University Rectors (CONARE), which includes the presidents of the state universities, the Office of Higher Education Planning (OPES), which functions as CONARE's executive secretariate, and the Linking Committee to coordinate the institutions of higher education and the branches of government.

The successful development of institutes, centers and research programs at state universities favors strengthening of a National System of Science and Technology.

Using the funds from the Interamerican Development Bank (BID), administrated by CONARE and CONICIT, the state universities research systems have acquired a level of maturity that enables them to obtain external funds and to work together with different sectors of the society, especially with the national productive sector.

This is how the state higher education in Costa Rica can claim a solid experience, deeply founded in the country's social, economic and political history, and closely related to the development of scientific and technological applications in the nation. This experience, along with their potential to develop human resources, makes the state universities play a key role as catalysts among the different sectors of society in order to contribute to solve the problems related to natural resources and the enviroment.

2. The Naturalistic Heritage

As a product of the naturalistic heritage bequeathed by the pioneers of national scientific activity, the state universities have held the environmental leadership. This was evident in the characteristic activism of the 70s, and later in the reflexive attitude that brought about the first scientific discussion forums on natural resources and environmental problems.

Thus, sponsored by the Ministry of Agriculture, CONICIT and the Universidad de Costa Rica, have been held the First Congress on Natural Resources, in 1974. We can find, also, the International Symposium on Ecology of Conservation and Development in Central America, in 1975; "The Costa Rica of the Year 2000" forum, in 1976; the First Symposium on Environmental Pollution, in 1980, and the definition of the First Environmental Profile, in 1981. In all these activities, the role of the state universities and the academicians has been very important.

In 1987, the Ministry of Natural Resources, Energy and Mines (MIRENEM), with the support of more than one-hundred scholars, began to formulate the first "Conservation Strategy for the Sustained Development of Costa Rica" (ECODES), which was also the first one of its kind in Latin America. Due to the level and quality of the professionals in the different fields of science and technology, ECODES was carried out without the participation of international consultants.

In 1988 the Seminar "University and Environment" was held, sponsored by DAAD. It was organized by CONARE, CSUCA and OTS. This first effort by the four universities to sistematize the environmental task contributed to verify the relevance of the environmental variable, the conservation related aspects, and the rational use of natural resources.

The focus of these items established an early link between the problems of conservation and those of development. Such focus also supported a model to use natural resources without their destruction. Later, both elements would be included in the concept of sustained development.

3. National and international context

The development of the universities in the last three decades has taken place within a context of crisis characterized by the loss of basic factors that support the current model of development, such as the impossibility of contracting new debts, the absence of direct foreign investment, the lack of a stable protected market for the integrationist industry, and the financial unbalance in the public sector.

This mixing of factors takes place within the framework of a deteriorating international economy, and in an atmosphere of political instability in the continent, primarily in Central America.

Looking at the near future, several events are seen to make the situation even worse: the prices of traditional Latin American exports are still low and show no sign of possible improvement; more competitive exports face the accentuated protectionism of industrialized countries; the terms of exchange continue to deteriorate for the surrounding countries; transnational companies have decreased their interest to invest in the Central American subregion, and the foreign debt increases but this, however, does not imply new flows of foreign savings invested in these countries.

Nevertheless, Costa Rica has been able to overcome the worst moments of the crisis, moving to a fragile economic stability, with a noticeable deterioration of the living conditions of the population and of the abiotic and biotic environment that shapes the different ecosystems.

4. The State of Our Natural Resources

In spite of the achievements that the country shows in ecological issues, which have been recognized worldwide as in the case of the System of Protected Areas covering almost 25% of the territory, as well as the efforts in favor of protecting biodiversity, there are still many important problems to be solved.

Paradoxically, while 25% of the national territory is protected, the patterns of land use of the remaining 75% have triggered the degradation of the most important natural resources.

A manifestation of this process is the fast and increasing deforestation. Even though there is more awareness about it today, Costa Rica exhibits a worrisome deforestation rate.

However, deforestation is only the tip of the iceberg, and the current tendencies of exploitation and use of forest resources reflect the per capita increase of manufactured timber that results from a population growth of 2.67%, a very low index of timber use and a remnant of productive forest areas that is lower everyday.

If this pattern of use of forest resources remains, in a few years the country will need to import hundreds of millions of dollars worth of timber.

On the other hand, the protected areas are endangered because of the pressure to exploit their resources of timber, minerals, water, fauna and tourism, exerted by the increasing absence of these resources out of the protected areas.

Those areas under any category of protection or management are also threatened by illegal land occupation, and by aggressive and inadequate projects of tourism development that, so far, have been stopped by the buffer areas that surround these lands. There is, therefore, an urgent need to create mechanisms to promote awareness, social agreement, and wide popular participation.

Intentional forest fires endanger natural resources. Every year, they destroy important areas and their flora and fauna. Numerous species of flora and fauna are going through a process of reduction and, in some cases, a process of extinction, even before specialists have the opportunity to describe and classify them.

This situation is the result of the use of the land for agriculture and forest exploitation that have destroyed the habitats, authorized and furtive hunting, pollution and the introduction of exotic species.

The main water basins of the country present a critical degree of deterioration resulting from deforestation, inadequate land use such as intensive exploitation without appropriate management, soilworks, and the extraction of materials in quarries.

These practices decrease the amount of land available for economic purposes, increase the sedimentation of dams and irrigation canals, cause the loss of the sailing capacity and the scenic beauty of rivers and ponds, increase the cost of drinking water supply and bring about the loss of ictiofauna.

Several population centers of the Great Metropolitan Area (GMA) and the lowlands of both coastal areas have frequent floods caused by the paving of natural streams, the inadequate canalization of rivers and the throwing and accumulation of litter and solid waste in the river beds.

The unstable slope areas undergo constant soil slips which are either natural or due to land misuse and building of roads, highways and other infracsture works without adequate planning.

These slips endanger complete villages and even the infrastructure works themselves, and they also limit the use of hydroelectrical resources for energy production.

The negative impact that the intensive, extensive and irrational use of pesticides causes on human life and the ecosystems is of outmost importance, especially in large monoculture plantations.

Many scientists and technicians in the state university research centers have warned about the pollution process of surface and underground waters, and about the sedimentation of dams and water streams. The main contaminants are the industrial waste of coffee and sugar cane processing plants, urban sewage and chemicals.

Negative impacts affect the drinking water supply, increase the maintenance costs of the main hydroelectric projects, diminish the efficiency and quality of crops due to pollution of irrigation waters. This leads to the salinization of the underground waters of the Pacific coastal areas.

Out of the total solid waste produced in the Central Valley, which is equivalent to 1.5 million kilograms per day, 30 % is collected and treated, 16% is collected but disposed inadequately, and 54% is not collected at all.

The air, especially in the urban centers of the GMA, contains increasing amounts of lead and sulphur oxide as a result of the excessive growth of automobile traffic and industrial emanations.

Directly related to the surplus of vehicles in urban centers, ear and visual pollution increase everyday and become worse as population grows.

Beaches are the direct final reservoir of all the pollution problems that occur within the territory, but the situation becomes particularly serious because of the lack of management and planning of the marine and coastal ecosystems. Most beaches located between the Port of Puntarenas and the mouth of the Tarcoles River are polluted by fecal coliforms.

5. Causes

When analyzing the origin of these problems, specialists point out, among other factors, the low level of public awareness, the lack of enforcement of existing laws, a prevailing model of development that favors the expansion of a productive sector which bases its growth on the overexploitation of natural resources, the low availability of information on use and management of resources and the absence of civil environmental ethics.

In spite of the great efforts made by the universities, other government agencies, and the Non Gubernamental Organizations, not enough scientific and technological resources have yet been allotted to the research of topics such as productivity of tropical ecosystems and the cost of opportunity of its present and future use in order to confront its value with that of any economic activity. In the absence of such knowledge, short and middle-term criteria, strictly financial, prevail.

6. Statement of Challenges

As stated in ECODES, the solution to these resource problems is summarized in three main goals: land organization, control of environmental quality and comprehensive management of resources.

The structural crisis and the deterioration of natural resources are increased by the tendency of population to grow. In the period from 1900 to 1990, the population grew ten times, from three hundred thousand to three million.

With such rate of population growth, Costa Rica is expected to reach six million inhabitants within the next 30 years, and the problem is not only how to fulfill people's basic needs, but also how to provide them with the necessary development in terms of quality of life.

Abundant financial resources will be needed to more than double the installed capacity in infrastructure, energy, drinking water, housing, education services, health, production areas for domestic use and exportation, as well as for other investments needed for social development.

Infrastructure for commercial and industrial development, where the present and future generations will work, will need to be created. Therefore, the demand for natural resources will increase, and it will require great financial investment.

Conflicts caused by the allocation of those resources, in terms of spatial use, will have to be solved too, as well as the flux pollution problems generated by the production processes.

Such prospective implies the creation of appropriate amounts of necessary quality frameworks in order to face future challenges keeping in mind the economic, social, environmental, and cultural impacts caused by the process of development of productive and urbanistic infrastructure.

The access to available arable land grows at a very slow pace and, at the same time, the increasing population rate produces a decreasing amount of arable land per capita. Due to this tendency, the focus of the style of development will be forced to change in the medium or long run.

The change toward sustainability requires information, knowledge, and scientific and technological development to provide the capacity to measure, evaluate, predict and control natural resources and design management techniques for habitats and ecosystems.

It is necessary to generate information and knowledge about loading capacities, sustainability conditions and indexes within which Costa Rican society is to carry out each one of its tasks.

The new paradigm of sustained development requires a change in environmental ethics, which is to be seen in terms of not only natural but also human environment, including the notion that people must have rights and duties with the environment and with sustained development.

Costa Rican state universities are a backbone for the creation of that new philosophy of sustained development and for the transformation of the individual according to his responsibility towards other human beings.

The stated challenges demand the creation of individual awareness, and the transfer of this awareness to the collective level in order to enable the discussion of comprehensive sustainability at the individual, family, and community levels.

7. From Rhetoric to Action

The active participation of the universities is essential to face present and future urgent challenges, to overcome mistakes, and to complete pending tasks. Their role would be to create, within a wide humanistic scope, the scientific, technical and professional groups needed; to strengthen basic and applied research and experimentation; to support processes to transfer results to productive sectors; and to promote the ethical participation of groups in social and economic processes.

Because of the importance and urgent nature of moving from rhetoric to action in the field of Sustained Development, higher education institutions have unavoidable responsibility. They have a key role to play because they are the main keepers of knowledge and information needed to face the challenges that this step implies.

Within this perspective, Costa Rican state universities stated their will to participate in the Bilateral Agreement of Cooperation for Sustained Development between Costa Rica and Holland, in Annex VII of the first document signed by all the participants in the agreement on March, 31, 1993.

8. The Holland-Costa Rica Agreement

In said document, the universities of both countries reiterate their deep commitment to the basic objectives of stated agreement in order to strengthen sustainable development, and the criteria of reciprocity, equality, and social participation encompassed in the main bylaws.

For the purposes of the agreement, the Costa Rican state universities fully share the concept of sustainable development proposed by ECODES and adopted by the parties in the first preparatory meeting as follows:

"A dynamic process in the management of natural resources, the enhancement of the human being, the mechanisms for self-awareness and citizen participation, the emphasis on scientific and technological development, the formulation of new legal and administrative frameworks, the orientation of the economy and the adoption of ethical principles of environmental responsibility that guarantee the respect towards the independent existence of all species, that strengthen the options to satisfy the basic needs and improve the quality of life of present generations without destroying the ecological bases or altering the systems of vital support on which future environmental quality and socio-economic development are based."

Likewise the state universities fully coincide in that "common effort" must be understood as "an alternative style of national and international cooperation that includes: a wide participation of the parties, the search of more fair and egalitarian relations, the reciprocal implementation of commitments on the basis of respect, equality, and the critical attitude and the team and simultaneous effort of all parties."

For the effects of the bilateral agreement, the Costa Rican state universities adopt the criteria and guidelines to guarantee that the activities carried out within the agreement contribute to the achievement of the "effective promotion of sustainable development in both countries based common effort."

The universities have satisfactorily ascertained that such criteria, encompassing ecological, cultural, social and economic dimensions of a sustainable development thoroughly correspond to the directions set for study programs, plans and projects of the higher state education centers in this area.

9. Potential of the universities

The universities have a substantial multiplying potencial through the formation of scientists, professionals and technicians as is required by the new paradigm of sustainable development.

At the intellectual vangard of the country, the Costa Rican state universities carry the distinctive banner of permanent change concerning the generation and spread of new knowledge which, in turn, effects education, research, and their projection into the community.

In this way, academic endeavors are projected into all the social strata by means of education and training formal and informal programs.

The monitoring of knowledge around the world and its difussion is nourished by the international relations that universities have established. These contacts have been strengthened and have become more flexible due to the new technological advances in electronic transmission of information.

The Costa Rican state universities are fully rooted and deeply linked to all the social, productive, and cultural sectors. This belonging in the social context allows them to provide apropiate solutions and to participate in society as an effective change agent, and at the same time, obtain the

feedback concerning the society's problems, interests and needs of the community.

In addition, state universities have historically projected themselves into the rest of Central America and the Caribbean, regions with which there are important linkages and academic commitments which every day acquire more relevance in light of the geopolitical and social situation of the regions.

Because of their nature, universities are institutions which rapidly gain access to the state of the art in the main scientific and technological areas; this knowledge enriches diverse research centers and is directly or indirectly channelled into the productive processes thus enhancing the quality of life and the general conditions for development.

One strength of great strategic value is that Costa Rican state universities enjoy high stability and political maturity which guarantees the continuity of their presence in the society. In this way, changes promoted by new political administrations and those changes that happen at high levels of these centers do not affect the operation of projects in progress.

The association and circulation of an important number of professors to political positions, private enterprises, advisory agencies, non-governmental agencies, etc. and their eventual return to the university, provide Costa Rican state universities with very unique characteristics within the Latin American context.

In addition to traditional roots, social influence and topical diversity, state universities have a wide sectorial and territorial distribution by means of networks, research centers, and experimental centers that practically cover the whole country in such a way that they represent the ideal means to spread the new paradigm of sustainable development.

In the Costa Rican case, state universities constitute, in addition to being the lucid conscience of the nation and the main gravity center for scientific and technological production, one axle for human development as well as one of the most important means for social mobility and change.

This aspect makes the difference concerning other nations since thanks to public higher education, hundreds of scientists, professionals, technicians, politicians and entrepreneurs have been able to raise from the most dispossessed social strata and very far away geographical zones.

Each state university separately or as part of a team effort with the rest of the state universities is able to practically cover all the fields of knowledge and the areas of social interest. Given their structure, universities have the capacity to adapt and change quickly and in a flexible manner.

There is no doubt that the Costa Rican state universities have an enormous consensual power and represent pressure groups on society in general and on the structures of political power in particular.

Up to the present time, state universities have been active agents before the environmental problems of the country by cooperating with the governments, the private sector and the communities in the search for alternative solutions.

Thanks to state university initiatives important contributions have been made in the knowledge of tropical ecosystems and the different associations and habitat, as is the case of the Gulf of Nicoya which is one of the natural estuaries best studied in the whole world.

This knowledge offers great possibilities for the restoration and regeneration of the ecosystems most affected by bad management, and for the development of techniques for habitat management and indexes for their sustainability and stability.

10. Areas of Concern

It is important to highlight that the academic and research structure of the Costa Rican state universities constitute a very important support system for the execution of projects in the different sectors and priority issues proposed by this agreement.

The human resources available to the state universities, as well as the installed capacity of the different centers and research institutes, research stations, laboratories, and experimental farms, in addition to a highly qualified academic staff make of the universities a fundamental element to establish the long term projects needed by the country to yield results at medium, and long range.

It is very difficult to encapsulate the capacity of the universities within the seven fields and the eight trans-sectorial elements specified in the Agreement, however, the state university proposal fully comply with the conditions set forth for this initiative.

In addition, each of the state universities that has expressed the will to participate in this Bilateral Agreement has an important trajectory in the area of conservation and management of natural resources.

10.1. Universidad de Costa Rica

The Universidad de Costa Rica (UCR) was created on August 26, 1940 to comply with a legal mandate during the administration of then president Dr. Rafael A. Calderón Guardia. The UCR harvests on 150 years of university tradition as it finds its roots on the old University of Saint Thomas funded in 1843, which closed in 1888. The School of Law, however, continued to exist and eventually became part of the UCR. A similar situation happened with the School of Pharmacy and the National School of Agriculture which became the predecessors of the presents Schools of Pharmacy and School of Agriculture at UCR.

The UCR opens its doors on March, 1941 to 716 students destributed in 10 schools: Law, Pharmacy, Agriculture, Pedagogy, Arts, Sciences, Humanities, Engineering, Dentistry, and Economic Sciences.

In the course of the years, the Institution has strengthened its autonomy and full legal capacity to acquire rights and undertake legal obligations, and for self-governance (Art. 84 Political Constitution).

The purpose of the University is to obtain the transformations that the society needs for the achievement of the common welfare through a policy directed to enhance social justice, develop the sciences, the arts and the humanities, and the furthering of an integral development of the society from the strengthening of the values of freedom and of a participatory democracy.

These objectives are based on the university reform of 1953 that incorporated the humanities core as an educational requirement for all graduates and new programs were opened to offer wider possibilities of professional formation.

Later on, the Vice-Rectories for Research is created as a result of the transformations proposed by the Third University Congress (1972-1973). This, together with the System of Graduate Studies strengthen and integrate within the institutional framework important isolated efforts as part of a vision of more university projection into the society.

According to statistical information for the last five years, the Universidad de Costa Rica presently has a population of about 29,000, the biggest student population of the existing universities. In addition to the 38 schools in the main campus, the UCR has four regional branches, and a university hall which together with the research stations guarantee its presence in all the provinces and geographical regions of the country (see chart 1.1 annex 1)

The operating structure of the institution is divided in five Vice-Rectories: Academic Affairs, Research, Social Action, Student Affairs, and Administration. The academic programs have been grouped in five areas: Arts and Humanities, Basic Sciences, Social Sciences, Engineering, and Health Sciences which impart 143 academic programs at the levels of graduate and undergraduate, as can be seen Chart 2.1, annex 2.

The research system is one of the most solid programs in Latin American and has 17 research centers and 11 research institutes, six experimental farms and two forestry preserves under its administration (see annex #2, chart #6). In addition, it includes the library system, the university publishing house, and the System of Graduate Studies. This last offers a doctorate program, 30 master programs and 55 programs leading to a specialization, as can be seen in Chart #2, annex 2.

Some of the graduate programs operate at Central American or Latin American levels, such is the case of public administration, biology, bio-medic sciences, physics, geography, geology, history, microbiology, parasitology, chemistry, and sociology (Chart 2.3, annex 2)

At the present time the construction of a series of buildings to house these programs is in progress. They will include modern equipment to facilitate the challenge for more scientific development that brings the XXI century. This infrastructure will allow the strengthening of some leading areas.

For some years the Universidad de Costa Rica has been offering, with the highest level of excellence, advanced training courses at the international level in specialized areas such as electronic microscoping, cellular and molecular biology, and research on natural products, among others.

Up to 1992 the library system houses more than 300,000 books, more than 10,000 specialized periodicals, and approximately 5,000 maps what makes it one of the most important libraries of Latin America (chart 2.7, annex 2)



The Editorial de la Universidad de Costa Rica, the university's publishing house, and the Office of Publications have together published an average of 45 titles (55,000 copies) in the last seven years and an average of 25 periodicals (22,000 copies), some of them enjoy great international prestige such as the Revista de Ciencias Sociales, the social sciences publication and the Revista de Biología Tropical, with more than 35 uninterrupted years of operation. Just these two publications generate more than 1,000 international periodicals as tradeoffs (see chart 2.8, annex 2)

During the last two years, the Editorial has published 83 titles, and for the present year 75 new books are estimated. The Office of Publications is in a remodelling process through the acquisition of new faster and more efficient equipment which will considerably increase the quantity and quality of the publications.

During the last five years, The Vice-Rectorcy for Research has been operating an average of 500 projects per year, many of these focusing on environmental or related aspects (see charts 2.4, annex 2)

In addition, springing from donations or national and international contracts, the University Foundation for Research (FUNDEVI) and the Office of Financial Administration efficiently administrate 300 project per year.

The Vice-Rectorcy for Social Action is responsible for maintaining the university presence in the communities by means of a variety of mechanisms and linking modalities which include in-service training in a variety of university programs and disciplines.

10.1.1. Environmental Record

The concern for environmental problems at the UCR go back to the origins of the University. This can be seen in the participation of its most distinguished academicians in numerous projects and academic activities related to the environment and more recently by the incorporation of programs of study on the environment and sustainable development.

The UCR has played a very important role in many occasions, but particularly at the onset of the 70's when it leads the opposition and blocks the implementation of questionable development projects that could have had a negative impact on the environment. Today, this has been recognized as a vanguard position in the defense of the national interest and has allowed to keep options open to the new generations of Costa Ricans.

Such was the successful opposition to the approval of a law that would have availed a contract with Aluminium Company of America (ALCOA) for the extraction of aluminium in the Valley of El General; the installation of an Inter-oceanic oil pipe through what is known today as El Parque Nacional Amistad (Friendship National Park); the extraction of mineral sand in the beaches of Potrero and Brasilito; the opposition to the Mining bill that triggered a reform in which the UCR was instrumental in determining the need to include studies on environmental impact, and the rescue of the Caño Island, today one of the most important protected areas.

The contribution of the UCR in raising awareness and the formation of citizenry consciousness has also been extensive through non-formal activities of environmental education such as the First National Congress on Natural Resources organized together with the CONICIT and the Ministry of Natural Resources in 1974. A year later, The First Symposium on Central American Ecology is organized and by 1980, The First National Symposium on Environmental Pollution takes place. In this way, the UCR is slowly moving from a reactive position before the environmental problems to a more proactive one.

The capacity on human resources and the existing infrastructure have contributed to a considerable expansion of research in diverse fields related to sustainable development. This has produced an increasing number of research projects and graduation theses in this area.

One of the university initiatives of most interest and impact concerning the environment was the relevant participation of a considerable number of academicians in the process to elaborate the Strategy of Conservation for the Costa Rican Sustainable Development (ECODES) between 1987 and 1990. The contributions provided by these university professors made it possible for this strategy to include a systemic, multisectorial, and intra-disciplinary approach.

Due to its maturity and the development obtained in all areas of the university endeavor, the UCR is in the position to contribute to the debate and the initiatives on new visions and positions concerning sustainability as a basis to face the new century.

For this reason, the UCR through the Vice-Rector for Research decided to create at the end of 1992 a program for sustainable development. This program has a coordinator who closely works with the Vice-Rector for Research and has the logistical and infrastructural support provided by the Institution.

The program is supported by the installed capacity of the different academic units, Research Centers and Institutes, acting as liaison and coordinating entity among the different university schools. In the same way, the program allows for the promotion of integral and interdisciplinary work within the conceptual framework of sustainable development according to institutional and national policies.

For the purposes of the Agreement Costa Rica-Holland, the UCR has identified, in a preliminary manner, 48 potential areas of individual or team work which include:

- . Rural agricultural systems of impact for small farmers
- . Analisis and reduction of the impact of road accidents
- . Analisis of the Central American environmental problems
- . Application of remote sensors to environmental and natural disasters
- . Contamination of vegetables by fungicides and heavy metals
- . Development and transference of technology for sustainability. Development of methodologies for measuring, predicting, and controlling the environment
- . Integrated rural development in Costa Rica and Central America
- . Economic development and the environment
- . Institutional development and the environment
- . Ecoturism and sustainable development
- . Environmental education of the community
- . Integrated strategies of regional territorial ordering
- . Studies on the capacity limits of ecosystems and habitat
- . Ethnia and sustainable development
- . Evaluation of heavy metal and aromatic hidrocarbon residues in Costa Rica critical geographical areas
- . Phyto improvement of forage products
- . Formation of human resources for sustainable development
- . University institutional strengthening and community projection for sustainable development
- . Gender and sustainable development
- . Quality control and productivity of agricultural subproducts
- . Environmental impact of urban growth on GMA (Great Metropolitan Area)
- . Environmental impact on projects of hydraulic resources
- . Youth and environment
- . Legislation and sustainable development
- . Integral management of solid waste
- . Improvement of technological capacity of municipalities
- . Methodologies for site evaluation of terrestrial ecosystems
- . Prevention models, promotion and attention to family structure
- . Modernization of agriculture and its impact on the environment

- . Planning and management of wilderness areas
- . Population and environment
- . Poverty and sustainable development
- . Sustainable development policies concerning the integral attention of health
- . Recovery of basins in fragile areas
- . Recovery of urban rivers
- . Recovery and interdisciplinary management of marine ecosystems and its areas of influence
- . International relations and sustainability
- . Restauration of terrestrial ecosystems
- . Public health, sustainable development and interorganizational endeavors
- . Technologies for the sustainable management of crops
- . Post harvest treatment of agricultural products

10.2. Instituto Tecnológico de Costa Rica

The Instituto Tecnológico de Costa Rica, ITCR, is an institution of university higher education with its own legal representation and administrative independence. It was created on June 10, 1971, in compliance with law No. 4777 and starts its operations in 1973. Its main campus is located in the province of Cartago.

The ITCR is a technological public institution of higher education. It was created by the state with the purpose to provide an important support to the scientific and technological development of the country through the formation of high quality professionals and research and development in strategic areas for the development of Costa Rica.

According to an agreement between the Ministry of Public Education and the ITCR, the Agricultural Technical School of Santa Clara located in San Carlos, province of Alajuela is transferred to the ITCR and it starts its operations on February 1, 1976 becoming the ITCR "Regional Branch of San Carlos."

In the same way, by Executive Decree 7124-E of June 8, 1977 an agreement is signed with the National Technical School which enables the ITCR to extend its activities to San José by transforming the National Technical School into a regional branch which in 1983 becomes the ITCR "Academic Center of San José."

The ITCR at present has three campuses:

- . The main campus, which is located 1 kilometer south of the Basilica of the Angels in the city of Cartago at an

altitude of approximately 1414 meters above sea level. This campus represents most of the ITCR physical infrastructure and it is here where most of the academic programs are offered.

It sprawls over an area of approximately 90 hectares with 44,185 square meters of physical infrastructure that includes classrooms, laboratories and shops, libraries, cafeteria and bookstore, gymnasium, administrative offices, and research centers.

Regional Branch of San Carlos, located in Santa Clara, a tropical humid region that focuses on the formation of professionals in agriculture, and to the research and development of the agricultural-forestal sector under conditions of humid tropics.

It has experimental farms dedicated to the research and development of problems unique to the humid tropics, and it has a complex of 23,000 square meters for classrooms, laboratories, library, administrative offices, repairshops for agricultural equipment, watering and drainage equipment, and storage facilities for drying and preparation of grain.

The Academic Center of San José which is located in Barrio Amon in the City of San José, has a construction area of 3127 square meters. Three study programs are offered here: Production Supervision, Architectural and Engineering Design, and Business Administration.

The next paragraphs will illustrate the most important events in the history of the ITCR in chronological order:

1973 The ITCR begins its activities offering the programs in Construction Engineering, Industrial Production, and Industrial Maintenance.

1975 The new program on Wood Engineering is created.

The area of Technological Extension is developed through courses, seminars, technical information and technological research.

Logistical support is created to provide technical assistance to businesses, public institutions and communities.

1976 Six new programs are created: Business Administration with emphasis on Finance and Marketing, Administrative Computing, Electronic Engineering, Forestry Engineering,

Land and Cattle Production Administration and Agriculture Engineering.

The ITCR opens a branch in Santa Clara of San Carlos and begins to offer the program on Agronomy Engineering

1978 The Academic Center of San José starts its operations

The ITCR broadens its horizons with two new programs: Technician on Architectural and Engineering Drawing, and Production Supervision.

The program on Business Administration with emphasis on Finance is created

Night courses are included in the catalogue

1979 A new specialization emphasis is included on the existing programs of Business Administration, and Human Resources at the Academic Center of San José. The courses were offered at night.

1980 Two new programs are created at the main campus: Industrial Design, and Safety and Occupational Hygiene.

1982 The program on Metallurgyc Engineering is created.

1983 The new Organizational Bylaws approved by the institutional community on December 17, 1982 becomes into effect.

1986-

1993 The following programs leading to a "Licenciatura" are offered:

Business Administration
Land and Cattle Business Administration
Agronomic Engineering
Agricultural Engineering
Construction Engineering
Electronic Engineering
Industrial Maintenance Engineering
Metallurgic Engineering
Forestry Engineering

The San Carlos Regional Branch opens. It provides housing facilities for teachers and students.

The programs on Administrative Computing and Business Administration begin to offer a Master's degree.

The program on Forestry Engineering and Wood Engineering are combined into one program only.

The integrated endeavors of teaching, research and extension programs of the ITCR are mainly oriented to prepare professionals in the technological field who are experts in their disciplines, and have a clear perspective of the socio-economic, cultural, and environmental context in which technology is generated, transferred and applied. This knowledge enables them to critically and creatively participate in the national productive activities, as well as in the systematic and continuous generation, adaptation and incorporation of the necessary technology to utilize and transform the resources and productive forces to the benefit of the country.

According to the ITCR Organizational Bylaws, its mission is to search for excellence in the development of all its activities, the permanent linkage with the Costa Rican reality as a way to direct policies and actions to the needs of the country and the freedom of speech, understood as the right of all professors to propose new academic programs and develop existing ones according to their own philosophical, scientific, political and religious convictions.

The ITCR has an organizational structure that includes different levels of academic staff, administrative staff, students, and alumni in the decision making.

The most important operating unit of the ITCR is the Academic Department that has the responsibility of imparting the courses, carry out the research, and projecting the institution into the different productive sectors of Costa Rica.

At the present time the ITCR offers 24 programs leading to undergraduate and graduate diplomas and 2 leading to postgraduate diplomas (see chart No. 3.2, annex No. 3).

The ITCR has established a series of policies and mechanisms concerning research and rendering of services to the productive sectors. The most important ones include academic excellence and the solution to national priority problems as the leading ones in all research and extension endeavors and the development of projects that take into consideration the socio-economic context of the country, in such a way that the results benefit the social interest of the majority.

Research at ITCR follows directions concerning priorities and areas defined by each Department Advisory Council according to guidelines already established.

Research is done on the basis of human and economic resources of the institution. Priority is given to those projects which comply with institutional policies enhancing the participation of academicians and students into the diverse projects which are carried out and that must be transferred to the corresponding sectors of the Costa Rican society. The results are spread by means of consulting activities, publications, mass media, etc.

The ITCR has developed a series of research areas as can be seen in Chart No. 3.1 Annex No. 3.

Through a loan granted by the Interamerican Development Bank, the institution acquired the financial resources to build in San José The Center of Technological Transference, infrastructure necessary to project institutional activities into the productive sectors.

The Center of Technological Information (CTI) which is a unit specialized in technological information services and the Technological Foundation of Costa Rica are then located at the Center of Technological Transference. The legal and administrative characteristics of the latter allow the Institute to provide a more efficient answer to the technological needs of the productive sectors.

10.2.1. Environmental record

From its beginnings the ITCR has carried out a series of efforts leading to provide an answer to the environmental problems at national level. At first, there were some isolated initiatives, however, in the course of the years the Institute has strategically concentrated its efforts on Programs and Research and Development Centers.

This policy has generated research and development centers in the following areas: Forestry-Industry, Environmental Protection, Biotechnology, Agroindustrial Management, Agronomy (sustainable agriculture), Computing, Computer Assisted Engineering, Housing, and Metallurgy. All these research units carry out research projects, projection into the community and rendering of services in close relationship with the sectors most benefitted from the results.

All these research and development centers continue to grow based on a series of priority areas for research and development that the Institution has previously defined and which are strongly supported by policies of sustainable development for the country.

Research and development projects at ITCR have focused on priority areas leading to the search and development of environmentally healthy technologies.

ITCR experience starts in 1980 with the design and construction of reactors for the processing of humid waste, the orderly management of soils to raise public awareness on the dangers represented by the deterioration of natural resources, socio-environmental diagnosis, non-formal education in the area of the environment, advisory and analysis of water quality, evaluation and design of treating plants for residual waters, alternatives in phyto-sanitary infrastructure, water supply in rural areas, technological packages of forestry production, studies on native forestry species, training and dissemination to different organized groups, evaluation and control of environmental pollutants in the population work place, among others.

Both at the Regional Branch of San Carlos (Northern Zone of Costa Rica), as well as in the main campus in Cartago, there is the necessary physical and human resource infrastructure in diverse areas such as Forestry Agronomy, Industrial Engineering, Chemical Engineering, Biology, Sanitary Engineering, Occupational Safety, Metallurgic Engineering, Construction Engineering, etc, as to join efforts with other private or governmental organizations both national and international, to develop shared projects for the sustainability of the natural resources in Costa Rica.

The ITCR priority areas which contribute in one way or the other to the sustainable development and which have been rendered as important within the agreement framework on Sustainable Development Costa Rica-Holland are:

- . Administration and economy of natural resources
- . Sustainable Agriculture
- . Agroecology
- . Agro information systems
- . Forestal Use
- . Area of agricultural machinery
- . Area of soil and water engineering
- . Carbonization
- . Material Science
- . Germoplasm conservation
- . Soil conservation
- . Contamination and sanitation
- . Quality control and construction materials
- . Quality control of materials in general
- . Modular coordination
- . Environmental education
- . Elements and constructive components testing
- . Non-destructive testing

- . Medicinal plants and spices
- . Population research
- . Vegetable physiology
- . Phytochemistry
- . Fruit trees
- . Metal casting
- . Agroindustrial Management
- . Vegetable histology
- . Management of non-traditional resources
- . Plantation management
- . Management of degraded basins and lands
- . Management and use of ecosystems
- . Corrective, preventive, and predictive industrial maintenance
- . Constructive methods
- . Microencapsulation
- . Construction norms
- . New construction materials
- . Rural infrastructure and electrification in agroindustrial businesses
- . Pastures and forages
- . Urban planning
- . Primary processing
- . Secondary processing
- . Agroindustrial processes
- . Herd production and health
- . Propagation and improvement
- . Forestal protection
- . Industry applied chemistry
- . Roots and tubers
- . Agricultural residues
- . Occupational health
- . Occupational safety and hygiene
- . Seeds and forestal greenhouses
- . Natural forest silviculture
- . Agro-forestal systems
- . Constructive systems
- . Mechanization techniques
- . Meat technology
- . Termic treatments

10.3. Universidad Nacional

The Universidad Nacional (UNA) is the result of a process initiated in 1915 when the province of Heredia was the home of the Escuela Normal de Costa Rica, the Alma Mater of the Costa Rican school teachers.

Fifty two years later, in 1967, the Escuela Normal Superior is created under the responsibility of the Escuela Normal de Costa Rica. The Escuela Superior is given the responsibility of preparing high school teachers.

On February 7, 1973 the two institutions are combined in compliance with law No. 5182 and the Universidad Nacional is born. Its mission is to respond to the needs of the country in the formation of professionals and to promote the development of the sciences, humanities, the arts and a national culture and identity.

The "Necessary University" is then created to offer an alternative to social groups which up to that point had not been covered by the other institutions of higher education, and with the purpose to establish linkages with different economic and social sectors of the society.

The organizational bylaws indicate as the institution fundamental goals the following: To contribute to the definition of a new cultural unit and of a set of national aspirations that characterize the development process.

In the same way, to create, cultivate, disseminate and preserve the sciences, the humanities and the arts, to enhance the integral development of the members of the university community and provide them with a humanistic formation based on the study of the national reality at the light of the topics and achievements of the universal culture and to promote the social transformation and the economic development of the country, thus contributing to the formation of a more prosperous, just, and freer society.

It is also a UNA's goal to contribute to the tuning of democracy and to foment a wider participation of the popular sector in the decision making and the benefits of development.

UNA's beginnings were not easy since it had to respond to a demand of 8,000 students with a scarce infrastructure and very young human resources. It then became necessary to carefully plan the growth of the infrastructure and to begin an aggressive plan for professional improvement of the new graduates.

This training was achieved to a large extent, thanks to external aid, in which Holland has played a decisive role in the last 10 years that has allowed the UNA to develop university strategic areas.

The UNA has made important efforts in the area of physical infrastructure. At the present time, the area constructed is about 150,000 square meters and more than 100 hectares of land. There are efforts in progress in order to strengthen the infrastructure and the research in priority fields.

The UNA offers 85 programs of study over a wide spectrum of the social and natural areas, natural and the social arts, natural, and artistic arts at the levels of technician, bachelor's degree, a "licentia", and Master's degree (see chart No. 4.1 annex No. 4).

Given the big demand for postgraduate programs, the UNA has consolidated a strong and dynamic Postgraduate System in priority areas. A high percentage of the postgraduate programs have an emphasis on Sustainable Development, since this is a priority area and it represents an axle of the university.

Postgraduate programs serve the entire region (Central America and the Caribbean) and some, as the Master's Degree in Wild Life show an enrollment of 60% international students and a 40% of nationals.

The administrative organization of the Universidad Nacional was considered five years ago as deficient. This originated a process of deep and participatory analysis to allow the University to become more flexible concerning its administrative processes.

This valuable and important process originated new Organizational Bylaws which were approved on March 10, 1993. The new guidelines will allow the Institution to adjust to the present changes and to enter the new century with a simple, flexible and strategic structure.

The new organization guarantees the integration of academia, research, and university projection programs through the creation of only one Vice-Rectorate for Academic Affairs with three branches for these areas.

It allows the reorientation of teaching, research and projection programs into integrated and interdisciplinary programs conceived from the perspective of sustainable development. These activities will be developed in strategic geographical regions and following priority issues for the development of these zones.

It also significantly reduces general and academic administration and presents a more flexible structure that will allow a higher participation of academicians in decision making.

The Universidad Nacional has one main campus in the Province of Heredia and two Regional Branches, one in the North of Costa Rica (Dry Tropic-Liberia), and another one in the South of the country (Humid Tropic-Pérez Zeledón).

The Northern Campus carries out academic endeavors not just in Liberia, province of Guanacaste, as the whole region is covered. Courses are taught for example, in Nicoya and Upala. Research and extension programs are carried out in this zone. It is important to highlight, however, the Mesoamerican Center of the Dry Tropic which covers the whole area of Dry Tropic in Mesoamerica. This Center is a pilot project to enhance multidisciplinary efforts to benefit the region.

The Southern campus carries out academic activities not only in Perez Zeledón, but also in Villa Neilly, Rio Claro, Golfito, Quepos and Puerto Jiménez where courses are taught. Research and extension programs are carried out throughout the region.

In the area of marine-coastal research, there is the Laboratory for Marine Research in Punta Morales. Likewise, the construction of the Fishery and Aquaculture Center and the Oceanography and Coastal Management in Puntarenas (Dry tropic).

The five priority development areas at the Universidad Nacional are:

- . Education
- . Sustainable development
- . Humanism and culture
- . Empowerment and human development
- . Health

During the 80's, the priority areas for research development were Oceanic Sciences, Forestry Sciences, Bioengineering (today known as Biotechnology) and some areas in the social sciences.

Later on, new areas were developed among which are Extraction and Synthesis of Natural Products, Alternative Sources of Energy, and the Utilization of Residues.

At the present time, the UNA has more than 350 research projects in progress, of which the majority can be placed in the area of sustainable development.

The growth in research projects concerning sustainable development in the past five years has increased in a 32%. Presently there are approximately 400 full time researchers in the area of science and technology development.

In this way, approximately 8.65% of the regular budget is invested on research. In addition, the UNA generates \$2.000,000,000 a year from external resources.

10.3.1. Environmental record

Since its creation the UNA has allocated a high percentage of its efforts to solve Costa Rica environmental problems through initiatives by schools like the School of Exact and Natural Sciences, the School of Land and Ocean Sciences, and the School of Health Sciences, among others. More recently, other schools in social, economic and humanistic areas have moved in this direction.

The School of Agrarian Sciences has been working for the last 20 years directly with communities, integrating in its study programs and academia endeavors the social and economic aspects of agrarian development, known today as sustainable development.

Given the success of this pilot project, the Institution has promoted the conformation of multidisciplinary groups to work on the solution of global problems related to the environment and development. Examples of this are the Program on Pesticides, the Recovery of the Basin of the Rio Segundo River, the work with coastal communities, the project on Herd Health, the reutilization of waste, the work concerning natural disasters, clean energy, tropical diseases, the production of organic fertilizers and more recently the creation of the Mesoamerican Center for Sustainable Development of the Dry Forest. Such center attempts to provide integral solutions under the concepts of sustainable development and regional impact to the dry tropical zone of Costa Rica. The experience in Costa Rica will be a model for the rest of the Dry Tropic of the Mesoamerican area.

As a consequence of the maturity acquired, the UNA has created in the last decade postgraduate programs leading to a Master's degree, mostly regional and interdisciplinary with emphasis on sustainable development. Among them are: the program on Wild Life, Rural Development, Economic Politics, International Relations, Regional Integration and Veterinary Science.

The UNA has played a very important role in the quest of citizen awareness concerning environmental problems at all social levels. With this purpose, a high percentage of its work has been focused on environmental education. The UNA is at present involved in the consolidation of study programs on these areas.

As a result of the ECO 92 Meeting that took place in Rio de Janeiro, the UNA accepted the responsibility to raise its teachers' awareness towards the Program 21. In this way, with the contribution of the Earth Council and the non-governmental organization CECADE, UNA has published in Spanish Program 21 and all the other agreements achieved at the Rio de Janeiro Conference. The UNA also organized a series of analytical meetings involving all the academic and administrative sectors with the double purpose of facilitating the internalization of the concepts, and at the same time enhancing a multiplying effect in their work and their communities.

The Institution has organized independently, and together with other institutions, a number of forums to analyze the sustainable development. Last year, for example, the UNA organized the national seminar "Impact on the Economic Policies on the Sustainable Development of the Land and Cattle Sector", at the regional level the seminar "Environment and Higher Education in Central America", at international level the congress "The Integration of the Community and Wild Life Towards a Future Sustainable Development." There are in progress for 1994, the world seminars on "Solar Energy and Ecological Economy".

On the bases of its expertise, the UNA has defined the following priority areas for the agreement:

- . Application of information systems
- . Climatic change
- . Sports, health and recreation
- . Cultural and artistic development
- . Rural development
- . Ecology and Development
- . Environmental and rural education
- . Environmental studies
- . Alternative energy sources
- . Tropical forest management and biodiversity studies
- . Management of sustainable silvipastoral systems
- . Management of coastal, marine, and aqua resources
- . Veterinary medicine, tropical diseases, and management of cattle systems
- . Women and development
- . Planning and action towards development policies
- . Poverty, human development and quality of life

- . Economic policy, international relations and sustainable development
- . Prevention and mitigation of natural disasters
- . Hydric resources and hydrographic basins
- . Tourism and ecotourism

10.4. Universidad Estatal a Distancia

The Universidad Estatal a Distancia (UNED) was created by Law No. 6044 and approved by Congress on February 22, 1977. There are two recognizable elements that justified the creation of a new university: first, to democratize higher education in an effort to make the university accessible to new social sectors which, in the past, have been deprived of continued education, thereby eliminating geographic, economic and social discrimination in numerous sectors of the Costa Rican population. Secondly, to maintain the student in his/her own worksite "without uprooting" the student from his/her own community and preparing him/her within the realm in which he/she will have to develop his/her professional life.

The distance education model attempts to fundamentally change the way knowledge is transmitted. Therefore, it is directed more toward methods and conditions of apprenticeship. Distance education, which replaces normal one-on-one education, does not require continuous individual presence on certain campuses.

Distance education applies a new educational technology which is based on intensive use of new theories of apprenticeship and of new means of communication, provoking an all new metamorphosis in the process of instruction-learning. It deals with a new educative approach, that centers the apprenticeship on the student, on the individual that can develop his/her process of instruction-apprenticeship off the university's walls, off the "lecture room" or the "conference", letting the student to transform "his/her own distinct surroundings in apprenticeship situations", whenever he desires it.

One of the characteristics of the educative distance modality has to do with its area of geographic influence. Though Costa Rica is a tiny country geographically speaking, UNED achieves a significant coverage, that contributes to the real process of democratization of the higher education. Its headquarters are located in Sabanilla de Montes de Oca, San José. Nowadays it has 29 University Centers distributed as follows: San José 5; Alajuela 6; Cartago 2; Heredia 1; Guanacaste 4; Puntarenas 7 and Limón 4 (See Graphic No. 2, Annex No. 1).

This coverage of the country permits it to have students from all over Costa Rica, from urban as well as from tiny rural communities. The process of democratization is in evidence as you find out that the graduates come from all regions of the country. This also shows that distance education not only provides the students with the opportunity to study but also the possibility of graduating.

Each University Center has a small library that contains approximately five or six thousand volumes, and each is integrated into the Central Library that has 30.000 volumes. All Centers are connected by means of a computerized network that permits the process of registering via microcomputer, and to solve administrative and academic affairs.

The Universidad Estatal a Distancia offers 21 programs of study and has directed a lot of its efforts to environmental education in its academic programs and in its research and extension activities (See Chart No. 5.1, Annex No.5).

In the context of the conservation and sustainable development, UNED has courses on natural resources, study of nature, environmental cleaning and health education; likewise, it keeps a publishing policy and an audiovisual production strongly oriented towards environmental problems and that is in charge of comprehension of tropical ecosystems and its handling.

In the distance educative system, the printed matter is the basic means of instruction-apprenticeship, which is called didactic unit. The elaboration of this type of text, which is the primary source of knowledge for the student, must be made for each course and must follow certain didactic and pedagogic objectives. Along with the intellectual labor of making a didactic unit, the professor must contemplate its reproduction, so that each student can have "his/her own book" at the right moment.

The Editorial UNED (EUNED), UNED's publishing house has under its responsibility the editing and publication of the didactic unit and that of the auxiliary printed matter that each student requires for each one of the courses offered. In addition to this voluminous task, EUNED counts with an editorial line that publishes books that are not only for the solely use of the university's courses, but for specific interests in different fields of knowledge, with the purpose of contributing with the development of areas of economy, sociology, anthropology, education in general, literature, exact and natural sciences, as well as in the field of technology. All these areas comprise a mass of primary

importance for the scientific and technologic development of the country.

The Editorial EUNED has published more than 1300 different titles, and more than one thousand are textbooks used in the courses taught at UNED. It also has 142 different titles in the field of the editorial line.

At the present the editorial production of UNED surpasses the publication of all other university editorials in Central America.

The University Council aware of the importance of research in the academic life of a university, made the decision of promoting this activity, giving a new organization to this university chore. This recent organized structure goes with the spirit of the Organizational Bylaws of UNED that synthesizes the following clauses:

"Promote the scientific, artistic, cultural and civic spirit of the Costa Rican people" (Organic Statute, Art.2)

"Fulfill and urge research programs in fundamental areas for the development of the country (Organizational Bylaws Art. 3)

"Research should be regulated by means of an order of priorities that keeps relationship with the present problems of foreground national interest, and preferable, that keeps close coordination with other institutions dedicated to do research" (Organic Statute, Art. 34)

"The university will promote research leading up to perfect its process of instruction-apprenticeship" (Art. 35)

Having as a framework for reference the ideas established by the Bylaws, two types of research areas were defined. Inside research, that deals with the academic and organization inside problems of the institution, that seeks to feedback the system with information about the characteristics and effectiveness of its own performance. On the other hand, the outside research, that deals with national or universal affairs, trying to give a contribution to the development of the institutions, the science, the technology and the culture.

With the purpose of securing that research becomes a permanent activity at UNED, with specific programs in the short, medium and long term, and that it has the same level of importance of the other two basic academic functions: teaching and extension, the University Council established starting in 1990 the following structure:

A RESEARCH OFFICE, oriented and advised in all its chores by a Research Council.

A CENTER OF RESEARCH FOR THE DEVELOPMENT OF THE DISTANCE EDUCATION (CIDED), formed to promote and fulfill educative research within the distance educative model.

A CENTER OF GENERAL RESEARCH (CIG), which objective is to promote, coordinate and carry out studies and research on subjects of national or universal interest, that belongs to any of the diverse fields of human knowledge.

With the above organized structure, the Universidad Estatal a Distancia is capable not only of promoting and developing educational research necessary to improve the academic performance of the institution, but also of being able to place itself within the field of applied research and technology.

Some efforts that evidence the beginning of this research projection in UNED are the 22 projects in execution.

10.4.1 Environmental Record

The environmental trajectory of UNED can be seen through several actions in the field of environmental education, among them: the Program on Environmental Education, the efforts of the Office of Community Extension and of Conservation of the Environment "Open Line with the National Community" and the Center of Information and Environmental Documentation (CEDIA).

By the end of 1976, the President of the Republic at that time asked the Ministry of Public Education, coordinator of the Committee responsible for the organization of the new university, to study the possibility of including in its programs, one course related to Environmental Education. Such request was approved and the Program of Environmental Education was established in 1977.

The program of Environmental Education has into its general objectives to create popular awareness about the environmental problems that the country suffers through different divulging actions and by making people conscious so that a change occurs in the way they deal with the problem.

The program is run through a Unit of Publications and a Unit of Preparation. The Unit of Publications performs activities for promoting, elaborating, editing, and publicating diverse types of educative materials, such as: books, pamphlets, sonovisos and the publication of the Magazine

BIOCENOSIS. The Unit of Preparation focuses its activities in the implementation of courses, national and international seminars, aimed to different sectors of the society.

The Office of Community Extension and Conservation of the Environment is in charge of projecting the University to the national community, in subjects related to the environmental education, the conservation of resources, the instruction of geography, the way to face the adversities that nature offers, or those provoked by man; and to exalt the Costa Rican nationality and its historic and civic values. Its functions are those relating to planning, promoting, directing, coordinating, and supervising extension projects (divulging actions, inter-institutional coordination and activities of community action) oriented to achieve and improve the quality of the Costa Rican's life.

In order to incorporate the real environmental dimension in its curriculum, this Office works also in the incorporation of the Environmental Dimension in the university endeavors. It also teaches courses of "Introduction to the Costa Rican Environmental Problematic" and "Environmental Didactics" to staff and community leaders in different geographical areas of the country.

The Project on Environmental Extension "Open Line with the National Community", has as its main function, in its first phase, to bring basic information and counseling to citizens that express concern about the ecological field, agriculture rational use of natural resources, public health, with the purpose of orienting them, finding possible alternative solutions and integrating them into the overall scheme.

The Center of Information and Environmental Documentation (CEDIA), offers information and has available for users, books, magazines, abstracts and other documents about themes related to the environment.

On the other hand, some programs that are offered through the Office of Academic Affairs, include courses related to environmental variables.

For the purposes of this bilateral agreement, UNED formulated 21 specific projects encapsulated in three thematic areas of the said project:

- . Agriculture and cattle-raising Development and Sustainability
- . Management of Natural Resources and Sustainable Development
- . Tourism.

ANNEXES

ANNEXE N^o1

**GEOGRAPHICAL LOCATION OF BRANCHES
OF STATE UNIVERSITIES IN COSTA RICA**

GRAFICO N° 1

UBICACION DE LAS SEDES Y SECCIONES REGIONALES Y RECINTOS DE LA UNIVERSIDAD DE COSTA RICA, UNIVERSIDAD NACIONAL Y DEL INSTITUTO TECNOLOGICO DE COSTA RICA.

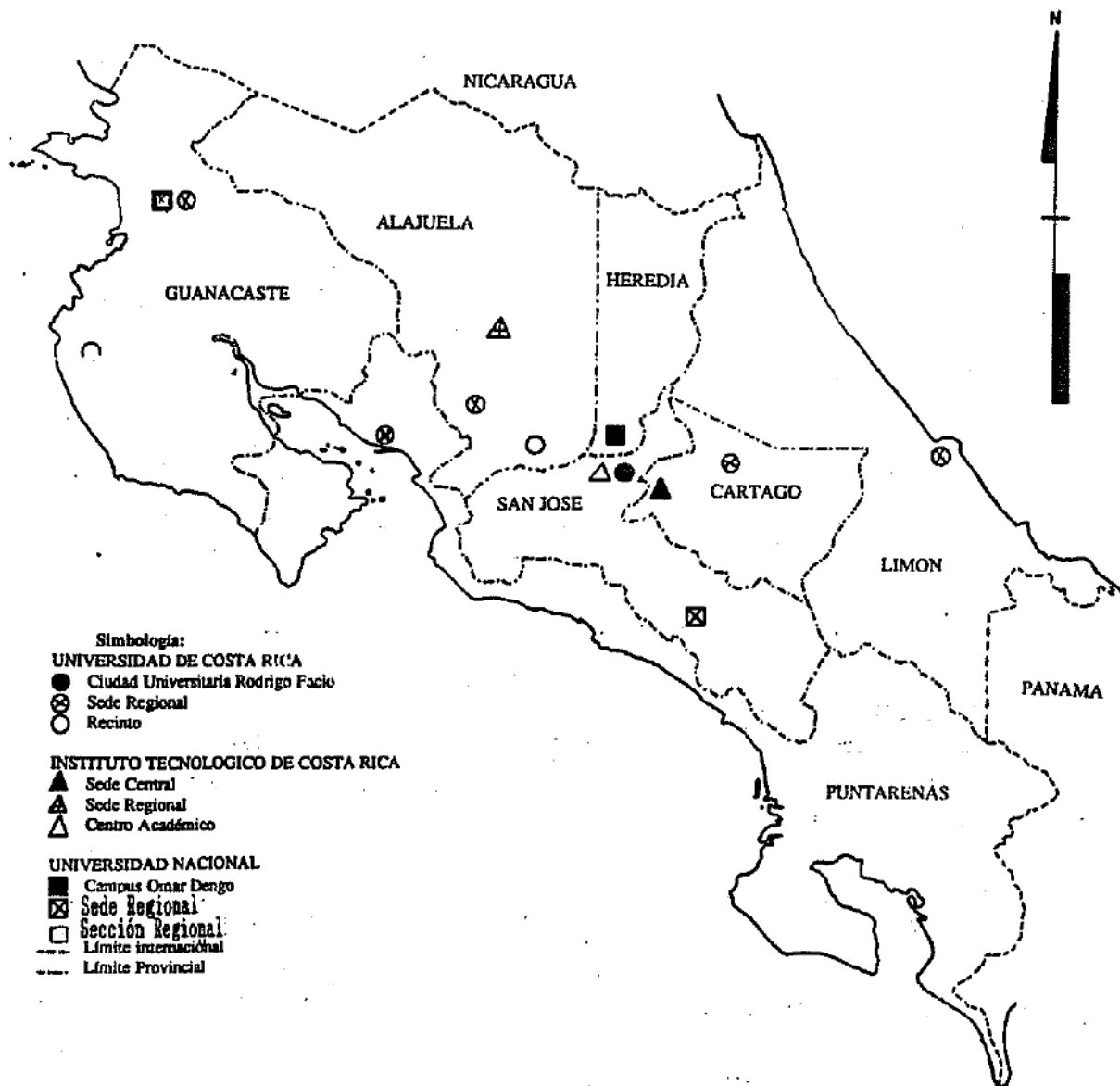
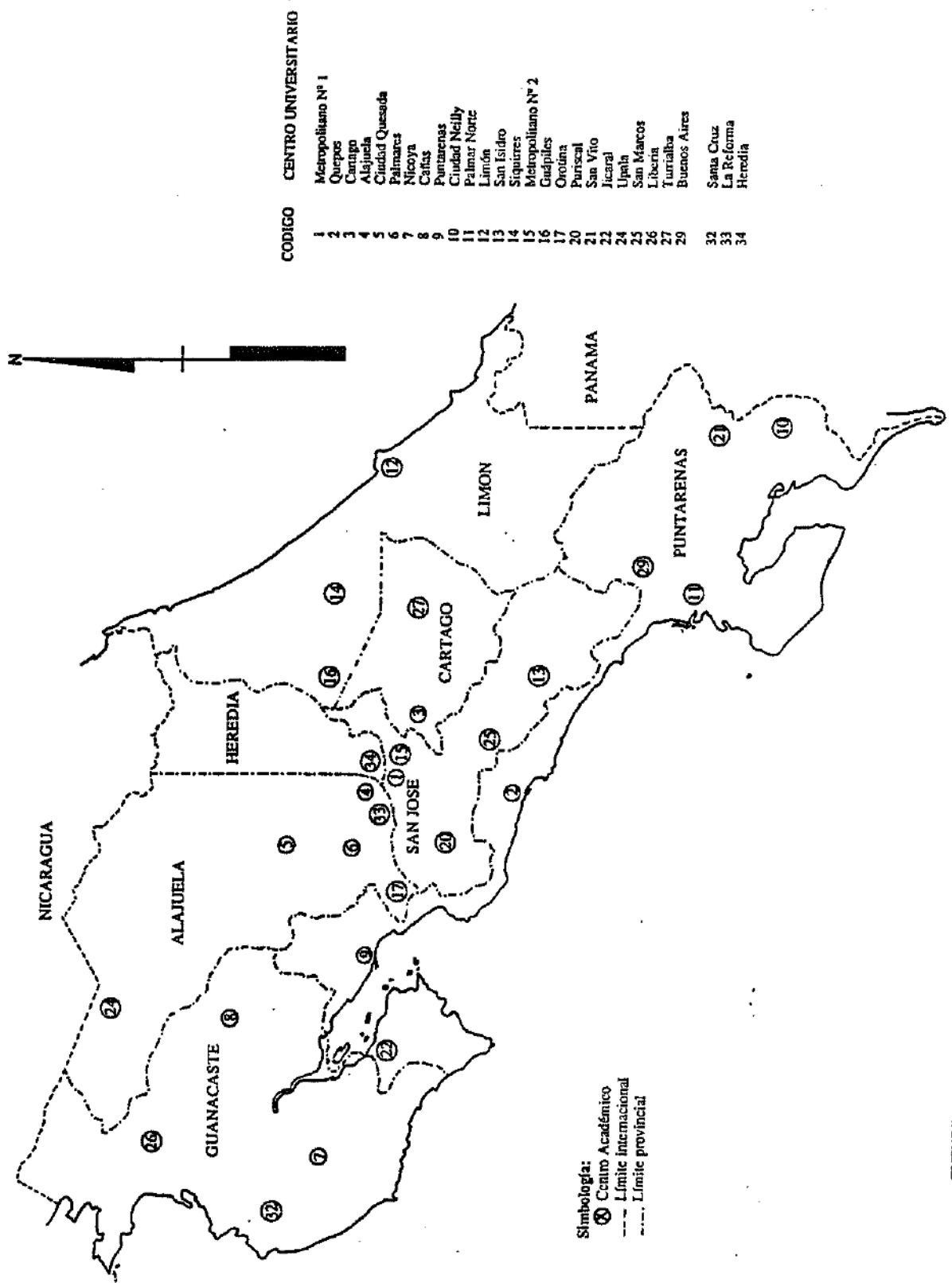


GRAFICO N° 2
UBICACION DE LOS CENTROS UNIVERSITARIOS
DE LA UNIVERSIDAD ESTATAL A DISTANCIA



CODIGO	CENTRO UNIVERSITARIO
1	Metropolitano N° 1
2	Quepos
3	Cartago
4	Alajuela
5	Ciudad Quesada
6	Palmaraz
7	Nicoya
8	Cañas
9	Puntarenas
10	Ciudad Neilly
11	Palmar Norte
12	Lamón
13	San Isidro
14	Siquirres
15	Metropolitano N° 2
16	Cudúptes
17	Orotina
20	Purisсал
21	San Vito
22	Jicaral
24	Upala
25	San Marcos
26	Libertad
27	Turrialba
29	Buenos Aires
32	Santa Cruz
33	La Reforma
34	Heredia

FUENTE: Elaborado por la Oficina de Planificación de la Educación Superior (OPES), con base en información suministrada por la Universidad Estatal a Distancia (UNED).

ANNEXE N°2

**GENERAL INFORMATION ABOUT THE
UNIVERSIDAD DE COSTA RICA**

TABLE Nº2.1

UNIVERSIDAD DE COSTA RICA
PRE-DEGREES AND DEGREES BY AREAS OF STUDIES,
SCHOOLS AND DEPARTMENTS

FINE ARTS AND HUMANITIES

SCHOOL	DEPARTMENT	AREA OF STUDIES
	General studies	Diploma and Bach. in Gral. studies
Fine arts	Drama	Bach and Lic. in Drama Bach. and Lic. in History of Art Diploma in Technical drawing Diploma in Publicity
	Music	Bach. and Lic. in Music with emphasis in Music Sciences Bach. and Lic. in Music with emphasis in Direction of Orchestra, Choir, Band or Instrument
Arts	Philology	Bach and Lic in Spanish Philology Bach & Lic. in Classic Philology Lic. in Linguistics
	Philosophy	Bach and Lic in Philosophy
	Modern Languages	Bach. in English Bach. in French Lic. in English Literature Lic. in French Literature Lic. in English Language

BASIC SCIENCES AREA

SCHOOL	DEPARTMENT	AREA OF STUDIES
Science	Biology	Bach & Lic. in Biology
	Physics	Bach in Physics
	Geology	Bach & Lic. in Meteorology Bach & Lic. in Geology
	Mathematics	Bach & Lic in Mathematics
	Chemistry	Lic. in Chemistry

SOCIAL SCIENCES

SCHOOL	DEPARTMENT	AREA OF STUDIES
Law		Bach. & Lic. in Law
Education	Adm. education	Lic. in Education with emphasis in administration of education Lic in Education with emphasis in Non-formal education programs management

	Library Science and Information	Bach in Library sciences with emphasis in Information Bach in Library Sciences with emphasis in Educational libraries Lic in Library sciences and information
	Teachers training	Bach. in Preschool education Lic. in Preschool education Professorship in Elementary education Bach in Elementary teaching (post professorship in elementary teaching) Lic in Elementary Education Bach in Industrial arts education
	Counselling and Special Education	Bach. in Education with emphasis in Counselling Lic in Education with emphasis in Counselling Bach in Education with emphasis in Special education
	Sports and Physical Education	Bach. in Physical Education Lic. in Physical Education
Economics	Business Management	Bach. & Lic. in Business Mgmt with several emphasis
	Public Administ.	Diploma, Bach. & Lic. in Pub. Adm.
	Economy	Diploma in Customs Administration
	Statistics	Bach. & lic. in Economy Bach. & Lic. in Statistics
Social Sciences	Mass Communication	Bach & Lic in Mass Comm. with several emphasis
	Psychology	Bach & Lic in Psychology
	Political Sciences	Bach & Lic in Political Sciences
	History & Geography	Bach & Lic in History Bach & lic in Geography Diploma in Adm. Filing
	Antropology and Sociology	Bach & lic in Antropology with several emphasis Bach & Lic in Sociology

ENGINEERING

SCHOOL	DEPARTMENT	AREA OF STUDIES
Agronomy	Phitotechny	Bach & lic in Agronomy with emphasis in Phitotechny
	Zootechny	Lic in Agronomy with emphasis in Zootechny
	Agricultural Economy	Lic in Agricultural Economy
Engineering	Topography	Diploma in Topography
	Civil Engineer	Lic in Civil Engineering
	Electrical Eng.	Bac & Lic in Electrical Eng.
	Industrial Eng.	Lic in Industrial Eng.
	Mechanical Eng.	Lic in Mechanic Engineering
	Chemical Eng.	Lic in Chemical Engineering
	Architecture	Lic in Architecture
Computer Sc.	Bach & Lic in Computer Sciences	

HEALTH SECTOR

SCHOOL	DEPARTMENT	AREA OF STUDIES
Medicine	Nursing	Bach in Nursing
		Bach in Nursing (complement) (attending classes)
		Bach in Nursing (complement) (tutorship)
		Lic in Nursing with emphasis in mental health and psychiatry
		Lic in Nursing with emphasis in Mental Health and perynatology
	Medicine	Bach in Medicine and Lic in Medicine and Surgery
		Diploma in Cytotechnology
		Diploma in Environmental Sanitation
	Odontology	Lic in Odontology
		Lic in Microbiology and Clinical Chemistry
	Microbiology	Diploma in Lab assistant
		Lic in Pharmacy
	Pharmacy	

COMMON AREAS OF STUDY

Bachelor's Degree in Natural Sciences Education
 Bachelor's Degree in Spanish and Literature Education
 Bachelor's Degree in English Education
 Bachelor's Degree in French Education
 Bachelor's Degree in Music Education
 Bachelor's Degree in Fine Arts Education
 Bachelor's Degree in Mathematics Education
 Bachelor's Degree in Social Studies Education
 Bachelor's Degree in Psychology Education
 "Licenciatura" in Physics, Chemistry or Biology Education
 "Licenciatura" in Mathematics Education
 Bachelor's Degree in Philosophy Education

INTERDISCIPLINARY STUDIES CARRERAS

"Licenciatura" in Nutrition
 "Licenciatura" in Food Technology

REGIONAL BRANCHES

West Regional Branch

Bach and Lic in Fine Arts with several concentrations
 Bach and Lic in Spanish Philology
 Bach and Lic in Biology
 Bach and Lic in Law
 Bach in Natural Science Education
 Bach in Mathematics Education
 Bach in Social Studies Education
 Professorship in Elementary School
 Lic in Pre-school education
 Lic in Library and Informational Sciences
 Lic in Agricultural Economy with concentrarion in Extention and agricultural promotion
 Bach in Nursing
 Diploma in Chemistry Lab
 Diploma in Construction
 Bach in Sciences of Elementary teaching
 Bach in Sciences of Pre-school education
 Bach in Spanish and Lit teaching
 Diploma in Computer sciences
 Lic in Social Work
 Lic in English education

Atlantic Regional Branch

Diploma in Computer sciences
Bach and Lic in Agronomic Engineering with concentration in Phytotechny
Diploma in Business Administration
Professorship in Library Sciences
Bach in Mathematics teaching

Guanacaste Regional Branch

Bach and Lit in Law
Bach in Teaching of Natural Sciences
Bach in Teaching of English
Professorship in Elementary School
Bach in Elementary school education (post-professorship level in Elementary School education)
Bach and Lic in Agronomic Engineering with concentration in Phytotechny
Bach in Nursing

Diploma in Computer Sciences
Bach in Social Work
Bach in Ecological Tourism

Limon Regional Branch

Bach in Natural Sciences education
Bach in Spanish and Literature education
Bach in English education
Bach in Social Sciences education
Professorship in Elementary education
Bach in Elementary Education (no-concentration, post-professorship level in Elementary Education)
Bach in Nursing

Puntarenas Branch

Professorship in Elementary School
Diploma in Business Administration
Diploma in Computer Sciences

TABLE Nº2.2

UNIVERSIDAD DE COSTA RICA
GRADUATE STUDIES SYSTEM (SEP)
PH.D., MASTERS, AND SPECIAL PROGRAMS

PH.D.

PHILOSOPHY

BUSINESS MANAGEMENT
BIOLOGY

BIOMEDICAL SCIENCES
(BIOCHEMISTRY,
PHARMACOLOGY, PHYSIOLOGY,
CELULAR PHYSIOLOGY)
POLITICAL SCIENCES
STATISTICS
PHILOSOPHY
ELECTRICAL ENGINEERING
CHEMICAL ENGINEERING
LITERATURE
PSYCOLOGY
PUBLIC HEALTH

LAW (CRIMINAL, AGRARIAN,
INTL. PUBLIC AND COMM.)
MEDICINE
PATHOLOGICAL ANATOMY
CARDIOLOGY

GENERAL SURGERY
PLASTIC AND RECOST. SURGERY
ENDOCRINOLOGY
GERIATRICS AND GERONTHOLOGY
HEMATHOLOGY
PEDIATRICS ENTYMOLOGY
CRITICAL MEDICINE AND
INTENSE THERAPYC
FAMILY AND COMMUNITY MEDICINE
INTERNAL MEDICINE
PEDIATRIC NEPHROLOGY
PNEUMOLOGY
NEUROLOGY
OPHTHALMOLOGY
SURGICAL ONCOLOGY
OTORHINOLORYNGOLOGY
CLINICAL PSYCHOLOGY
RARIOLOGY AND MEDICAL IMAGES
REUMATOLOGY
PERIPHERAL VASCULAR

MICROBIOLOGY
HAEMATOLOGY

CLINICAL IMMUNOLOGY
PARASITHOLOGY
TOXICOLOGY AND ANALITICAL
TOXINOLOGY

MASTERS

PUBLIC MANAGEMENT
AGRICULTURAL SCIENCES AND
NATURAL RESOURCES (AGROFORESTY,
BIOTECHNOLOGY, ANIMAL NUTRITION,
CROP PROTECTION, SOILS)
COGNOSCITIVE SCIENCES

EDUCATION
WOMENS STUDIES
CIVIL ENGINEERING
INDUSTRIAL ENGINEERING
LINGUISTICS
MATHEMATICS
INTEGRAL REHABILITATION
TELEMATHICS

SPECIALITIES

INTEGRAL DEVELOP. IN LOW
RISK REGION
HEALTH SERVICES ADMINISTRATION
ANAESTHESIOLOGY
THORAX SURGERY AND
CARDIOVASCULAR
ONCOLOGICAL SURGERY
DERMATHOLOGY
GASTROENTEROLOGY
GINECOLOGY AND OBSTETRICS
ENTYMOLOGY
CRITICAL PEDIATRICS MEDICINE

MEDICAL EMERGENCIES
MEDICINE AND REHABILITATION
NEPHROLOGY
NEONATOLOGY
PEDIATRIC PNEUMOLOGY
NEUROSURGERY
MEDICAL ONCOLOGY
ORTHOPEDECS AND TRAUMATHOLOGY
PEDIATRICS
PSICHIATRICS
RADIO THERAPY
UROLOGY
LEGAL MEDICINE AND FORENSIC
PATHOLOGY
MEDICAL BACTERIOLOGY
IMMUNE HAEMATOLGY AND BLOOD
BANK
MEDICAL MICOLOGY
CLINICAL CHEMISTRY

ODONTOLOGY

TABLE Nº2.3

UNIVERSIDAD DE COSTA RICA
GRADUATE PROGRAM AT REGIONAL LEVEL OFFERED BY THE
GRADUATE STUDIES SYSTEM (SEP)

MASTERS LEVEL

Public Administration
Biology
Biomedical Sciences
Physics
Geology
Geography
History
Microbiology, Parasitology, Chemistry
Chemistry
Sociology

TABLE Nº2.4

UNIVERSIDAD DE COSTA RICA
RESEARCH PROOJECTS BEING DEVELOPED
BY AREA 1988 - 1992

AREA	1988	1989	1990	1991	1992
Arts & Fine Arts	28	34	42	47	44
Basic Sciences	141	158	172	191	159
Social Sciences	127	133	141	151	129
Engineering & Archit.	108	110	121	129	127
Health	92	100	114	115	102
Regional Branches	20	18	19	22	23
Other branches	17	17	15	18	15
TOTAL	533	570	624	273	593

By May 1993, 529 projects are being executed.

TABLE Nº2.5

UNIVERSIDAD DE COSTA RICA
REGISTERED RESEARCHERS
BASED ON DATA FROM 7-28-93

AREA	TOTAL	%
Basic Sciences	11721.2	
Social Sciences	12322.3	
Engineering & Archit.	10619.2	
Health	10318.7	
Arts and Fine arts	48	8.7
*Regional branches	39	7.2
*Other branches	15	2.7
Total	551	100

* Note: Because of their interdisciplinary character, they were classified in different categories.

TABLE Nº2.6

UNIVERSIDAD DE COSTA RICA
RESEARCH UNITS

AGRICULTURAL RESEARCH INSTITUTE (IIRA)
 CLODOMIRO PICADO INSTITUTE (ICP)
 ECONOMY SCIENCES RESEARCH INSTITUTE (IICE)
 PHILOSOPHICAL RESEARCH INSTITUTE (INIF)
 ENGINEERING RESEARCH INSTITUTE (INII)
 HEALTH RESEARCH INSTITUTE (INISA)
 JUDICIAL RESEARCH INSTITUTE (IIJ)
 RESEARCH INSTITUTE FOR THE IMPROVEMENT OF THE EDUCATION IN COSTA RICA (IIMEC)
 PSYCHOLOGICAL RESEARCH INSTITUTE (IIP)
 SOCIAL RESEARCH INSTITUTE (IIS)
 AGRONOMICAL RESEARCH INSTITUTE (IIA)
 GEOPHYSICAL RESEARCH CENTER (CIGEFI)
 HISTORY RESEARCH CENTER (CIH)
 MOLECULAR AND CELLULAR BIOLOGY RESEARCH CENTER (CIBCM)
 LIMNOLOGY AND SEALIFE SCIENCES RESEARCH CENTER (CIMAR)
 MATERIALS SCIENCE AND ENGINEERING RESEARCH CENTER (CICIMA)
 ENVIRONMENTAL POLLUTION RESEARCH CENTER (CICA)
 CHEMICAL ENERGY AND ELECTRO-CHEMISTRY RESEARCH CENTER (CELEQ)
 GRAINS AND SEEDS RESEARCH CENTER (CIGRAS)
 ABNORMAL HEMOGLOBIN AND SIMILAR DISORDERS RESEARCH CENTER (CIHATA)
 ANIMAL NUTRITION RESEARCH CENTER (LANA)
 NATURAL PRODUCTS RESEARCH CENTER (CIPRONA)
 CROP PROTECTION RESEARCH CENTER (CIPROC)
 FOOD TECHNOLOGY RESEARCH CENTER (CITA)
 LEATHER TECHNOLOGY RESEARCH CENTER (CETEC)
 PARASITE STUDY AND DIAGNOSIS RESEARCH CENTER (CIDPA)
 ALFREDO VOLIO MATA EXPERIMENTAL STATION (EEAVM)
 FABIO BAUDRIT MORENO EXPERIMENTAL STATION (EEFBM)
 RIO FRIO EXPERIMENTAL FARM
 LA SOLEDAD FARM
 SANTA CRUZ EXPERIMENTAL FARM
 LANKESTER GARDEN
 ELECTRONIC MICROSCOPY UNIT (UME)
 BIOTERIOS UNIT (UBI)
 BIOLOGICAL TESTS LABORATORY (LEBI)

CUADRO N°2.7

UNIVERSIDAD DE COSTA RICA
LIBRARIES, DOCUMENTATION, AND INFORMATION SYSTEMS
BIBLIOGRAPHIC MATERIAL STATISTICS 1987-1992**

	to 1987	1988	1989	1990	1991	1992	to 1992
Books	272.002	6.477	8.248	6.043	8.596	8.680	311.046
Thesis	24.206	1.420	1.051	1.826	1.870	1.861	32.234
Magazines*	9.516	174	164	88	272	89	10.303
Audiovisual	19.858	267	412	301	187	92	21.117
Materials							
Maps & Atlas	4.427	28	114	122	62	111	4.864

* Since 1990, 229 suscription titles were suspended.

* Magazines received during 1987-1992 were donations or exchange.

** These collections are distributed among five libraries: Carlos Monge Alfaro Library, Luis Demetrio Tinoco Library, Law Library, Health Library, and Pharmacy Library.

TABLE N°2.8

UNIVERSIDAD DE COSTA RICA
TITLES PUBLISHED
(1987-1993)

	1987	1988	1989	1990	1991	1992	1993
Books	39	27	35	38	41	42	90(1)
Magazines	*	16	15	29	23	41	*

1. Title in processing to July 1993.

* No information available.

ANNEXE N°3

**INSTITUTO TECNOLOGICO DE COSTA RICA
GENERAL INFORMATION**

TABLE Nº3.1

INSTITUTO TECNOLOGICO DE COSTA RICA
RESEARCH AREAS

FOREST-INDUSTRY INTEGRATION

Primary processing
Secondary processing
Charcoal production
Timber harvesting
Seeds and forest nurseries
Forest plantations management
Forest protection
Natural tropical forest silviculture
Watershed and degraded land management
Agroforestry systems

BIOTECHNOLOGY

Propagation and genetic improvement
Germoplasm conservation
Microencapsulation
Phytochemistry
Poblation Ecology
Plant Histology
Plant Physiology

ENVIRONMENTAL PRESERVATION

Pollution and Public Health
Ecosystems management
Environmental education
Occupational Health
Pollution by Pesticide

CHEMISTRY

Chemistry applied to Industry

MANAGEMENT OF AGRICULTURAL AND AGRO-INDUSTRY ENTERPRISES

Food processing in post-harvest handling
Economics and Management of Natural Resources
Management of agricultural and agro-industry enterprises.

AGRICULTURAL MACHINERY ENGINEERING

Soil engineering and hydrology areas
Materials, accessories and technics
Agricultural machinery area. (Agricultural Machinery testing)
Mechanization technics
Works and rural electricity supply
Facilities for the agriculture and livestock enterprises

ALTERNATIVE AGRICULTURE FOR THE HUMID TROPIC

Crops:

Grains, species, root crops, tubers, citrus fruits, vegetables, sugar cane.

Fruit trees

Animal production:

Forage, meat and milk livestock production, biotechnology in animal reproduction.

Animal sanitation:

Cattle, swine and poultry

Grasses and forages

Meat technology

Soil conservation

Agroecology

Sustainable agriculture

COMPUTER SCIENCE

Information Systems

Data Bases

Software Engineering

Artificial Intelligence & Expert Systems

Communication y teleprocessing

Telematics

Computer Architectures

INFORMATICS APPLIED TO INDUSTRY

Computer Aided Design

Computer Aided Manufacturing

Programming controls

Software development in industry

INDUSTRIAL MAINTENANCE ENGINEERING

Mechanical Engineering

Electrical Engineering

Reconstructive maintenance

Forecast maintenance

Maintenance management

HOUSING

Constructive standards

Testing of constructive elements

Constructive Approaches

Quality Control and construction materials

New construction materials

Modular Coordination

Systems

Urban Planning

CONSTRUCTION ENGINEERING

Construction process management, oriented to the efficiency of the following aspects:

- Quality Control
- Cost
- Time
- Safety

INDUSTRIAL DESIGN

- Drawing design
- Product design
- Package design
- Prototype development
- Ceramics
- Simulation
- Computer graphics design

SCIENCE OF MATERIAL

- Science of Material
- Quality control of material
- Foundry
- Non-destructive testing
- Heat treatment
- Extractive metallurgy

BUSINESS ADMINISTRATION

- Finance
- Marketing
- Human Resources
- Management Information Systems
- Strategic Planning

INDUSTRIAL PRODUCTION

- Quality
- Productivity
- Modern systems of manufacture
- Occupational Health and Safety

ELECTRONIC ENGINEERING

- Digital systems
- Control and regulation
- Telecommunication

TABLE Nº3.2

INSTITUTO TECNOLÓGICO DE COSTA RICA
TITLES AND ACADEMIC DEGREES IN THE DIFFERENT PROGRAMS

TITLE	ACADEMIC DEGREE
Business Administration	Bachelor, Licenciatura and Master
Agricultural Business Administration	Bachelor, Licenciatura
Agronomic	Bachelor, Licenciatura
Industrial Design	Bachelor
Agricultural Machinery Engineering	Bachelor, Licenciatura
Computer Engineering	Bachelor, Master
Construction Engineering	Bachelor, Licenciatura
Electronics Engineering	Bachelor, Licenciatura
Industrial Maintenance Engineering	Bachelor, Licenciatura
Metallurgic Engineering	Bachelor, Licenciatura
Industrial Production Engineering	Bachelor
Forestry Engineering Licenciatura	Associate, Bachelor,
High Level Technician in Drawing of Architecture and Engineering	Associate
High Level Technician in Occupational Health and Safety	Associate
High Level Technician in Supervision of Production	Associate

TABLE Nº3.3

INSTITUTO TECNOLOGICO DE COSTA RICA
GENERAL INFORMATION
1992

GLOBAL BUDGET		¢1 883 020 900
NUMBER OF STUDENTS		4 376
FEMALE	968	
MALE	3 408	
VOLUME OF BOOKS		47 000
VOLUME OF MAGAZINES		1 429
BUDGET IN RESEARCH		¢51 104 297
PROJECTS UNDER EXECUTION		35
FACULTY		411
BACHELOR DEGREE	113	
LICENCIATURA DEGREE	185	
MASTER DEGREE	102	
Ph.D. DEGREE	11	
NUMBER OF FACULTY INVOLVED IN RESEARCH PROJECTS		95

ANNEXE N°4

**UNIVERSIDAD NACIONAL
GENERAL INFORMATION**

TABLE Nº4.1

UNIVERSIDAD NACIONAL
TITLES AND ACADEMIC DEGREES GRANTED

Exact and Natural Sciences School

- . Biological Sciences Department
 - Marine Biology
Bachelor's Degree and "Licenciatura"
 - Tropical Biology
Bachelor's Degree and "Licenciatura"
 - Sciences Education
Bachelor's Degree

- . Mathematics
 - Mathematics Education
Professor, Bachelor's Degree and "Licenciatura"

- . Topography, Registry and Geodesics
 - Topography and Geodesic Engineer
"Licenciatura"
 - Topography and Registry Technician
Diploma
 - Topographer
Bachelor's Degree
 - Topographer and Geodesic expert
Bachelor's Degree

- . Physics
No programs offered

- . Chemistry Department
No programs offered currently. Last one offered in 1992.

- . Computer Sciences
 - Computer Sciences
Diploma
 - System Analysis
Bachelor's Degree
 - Information Systems
"Licenciatura"

School of Earth and Sea Sciences

- . Agricultural Sciences School
 - Agronomist
Bachelor's Degree and "Licenciatura"

- Environmental Sciences School
 - Environment Education
"Licenciatura"
 - Forestry Sciences Engineer
Bachelor's Degree and "Licenciatura"

- Geographical Sciences School
 - Geography with emphasis in:
 - a) Human Geography
Bachelor's Degree
 - b) Physical Geography
Terminal plan

- Geographical Sciences
Bachelor's Degree

- Geographical Sciences with emphasis in:
 - a) Territorial management of Natural and Environmental Resources
"Licenciatura" (in process)
 - b) Human Resources Human Management by territories
"Licenciatura" (in process)
 - c) Territories and Environment Planning
"Licenciatura" (in process)

Health Sciences School

- Veterinary Dept.
 - Veterinary
"Licenciatura"
 - Veterinary with emphasis in:
 - a) Flock health
Masters
 - b) Tropical diseases
Masters

- Sports
 - Physical Education
Bachelor's Degree and "Licenciatura"
 - Football Technical Management
Diploma

Social Sciences School

- Labor Studies Institute (IESTRA)
 - Labor Management
Bachelor's Degree
 - Labor Management with emphasis in:
 - a) Human resources
"Licenciatura"

b) Finance
"Licenciatura"

Population Social Studies Institute (IDESPO)
It only offers courses specialized in Research Methods

Sociology Dept.

- Sociology
Bachelor's Degree
- Sociology with emphasis in:
 - a) Agricultural Development
"Licenciatura"
 - b) Urban Development
"Licenciatura"
- Judicial Administration School
(graduate degree in process)

Social Planning and Promotion Dept.

- Economic and Social Planning with emphasis in:
 - a) Regional and Local
Bachelor's Degree

Economy Dept.

- Economy
Bachelor's Degree
- Economy
"Licenciatura" (Terminal plan)
- Economy with emphasis on International Finance
"Licenciatura"
- Economy with emphasis in :
 - a) International Economy
Masters
- Human Resources
Masters
- Sustainable Development and Ecological Economy
Masters

Professional Secretary Dept.

- Professional secretary
Diploma and Bachelor's Degree
- Professional Secretary with emphasis in:
 - a) Business Education
"Licenciatura"
 - b) English
"Licenciatura"
 - c) Office machines
"Licenciatura"

International Relations Dept.

- International Relations
Bachelor's Degree
- International Relations with emphasis in:

- a) International Economic Relations
"Licenciatura"
- b) International Politics
"Licenciatura"

History Dept.

- History
Bachelor's Degree and "Licenciatura"
- Social Studies Teaching
Bachelor's Degree and "Licenciatura"
- Applied Social History
Masters (in process)

Research and Education Center (CIDE)

Basic Education Director

- Preschool Education
Diploma, Bachelor's Degree and "Licenciatura"
- I and II Educational cycles (high school)
Diploma, Bachelor's Degree and "Licenciatura"
- Special Education
Bachelor's Degree and "Licenciatura"

Rural Education Director

- Sciences of Education with emphasis in:
 - a) I and II Cycles (high school)
Diploma, Bachelor's Degree and "Licenciatura"
- Special Education
Bachelor's Degree and "Licenciatura"

Rural Education Director

- Sciences of Education with emphasis in:
 - a) I and II Cycles (high school)
Diploma, Bachelor's Degree and "Licenciatura"

Vocational Education Director

- Sciences of Education
Bachelor's Degree
- Sciences of Education with concentration in:
 - a) Industrial arts
Bachelor's Degree
 - b) Family and Social life
Bachelor's Degree
- Sciences of Education with emphasis in:
 - a) Educational Management
"Licenciatura"
 - b) Educational counselling
"Licenciatura"

Center of Research, Education and Fine Arts (CIDEA)

- . Music Dept.
 - Music with emphasis in education:
 - a) Singing
Bachelor's Degree and "Licenciatura"
 - b) Choir Conductor
Bachelor's Degree and "Licenciatura"
 - c) Instrument playing
Bachelor's Degree and "Licenciatura"
 - Music with concentration in:
 - a) Music Education
Bachelor's Degree
 - b) Choir or Instrument Teaching
Bachelor's Degree (Terminal plan)
 - Music with emphasis in:
 - a) Music education
"Licenciatura"
- . Dancing Dept.
 - Dance
Bachelor's Degree
- . Theatre Dept.
 - Scenic arts with emphasis in:
 - a) Performance
Bachelor's Degree and "Licenciatura"
 - b) Entertainment
Bachelor's Degree and "Licenciatura"
 - c) Directorate
Bachelor's Degree and "Licenciatura"
 - ch) Scenography
Bachelor's Degree and "Licenciatura"
 - d) Theatre
Bachelor's Degree and "Licenciatura"
- . Fine Arts Dept.
 - Handicrafts
Diploma
 - Fine Arts Education with emphasis in:
 - a) Ceramics
Bachelor's Degree
 - b) Wood
Bachelor's Degree
 - c) Metals
Bachelor's Degree
 - ch) Textiles
Bachelor's Degree

- Fine Arts with emphasis in:
 - a) Engraving
Bachelor's Degree and Licenciatura
 - b) Painting
Bachelor's Degree and "Licenciatura"
 - c) Drawing
Bachelor's Degree and "Licenciatura"
 - ch) Sculpture
Bachelor's Degree and "Licenciatura"
 - d) Fine Arts theory
Bachelor's Degree and "Licenciatura"

Philosophy and Arts School

Philosophy Department

- . Computing teaching
Bachelor's Degree
- . Library, Documentation and Information School
- Library Sciences
Diploma and Bachelor's Degree
- . Literature School and Sciences of Language
Spanish
- Spanish teaching
Bachelor's Degree
- Literature and Linguistic with emphasis in:
 - a) Spanish
Bachelor's Degree and "Licenciatura"

French

- French language
Diploma
- French Teaching
Bachelor's Degree
- Applied linguistic with emphasis in:
 - a) French Teaching
"Licenciatura"

English

- English teaching
Bachelor's Degree
- English
Diploma and Bachelor's Degree
- Literature and Linguistic with emphasis in:
 - a) English
Bachelor's Degree (Plan Terminal) and "Licenciatura"
- Community Service
- It offers only basic language courses

Translation
- Translation (English/Spanish or French/Spanish)
"Licenciatura"

Ecumenical School of Religion Sciences
- Theology
Bachelor's Degree and "Licenciatura"

Instituto de Estudios de la Mujer (IEM)
Women's studies Institute
- Women's studies
Masters' Degree (UNA-UCR)

Latin American Studies Institute (IDELA)
- Latin American studies

Brunca Region Branch (SOUTH)

Education
- Education in Cycles I and II
a) attending classes
b) not attending classes
Diploma and Bachelor's Degree
-Preschool education
Bachelor's Degree
- Counselling
Bachelor's Degree
- Administration in Education
Bachelor's Degree
- Natural Sciences
Teacher's degree
-English (UNA-MEP Agreement)
Teacher's degree
-Spanish (UNA-MEP agreement)
Teacher's degree
- Teaching Spanish
Bachelor's Degree
Teaching Mathematics
Teachers' degree

Social Sciences
- Social promotion and planning
"Licenciatura"
Labor administration
Bachelor's Degree

Exact and natural sciences
- Computer sciences
Bachelor's Degree

Chorotega Region Branch (North)

Education

- Education
Diploma
- Education with concentration in:
 - a) I and II cycle (high school)
Bachelor's Degree
 - b) Pre-school
Bachelor's Degree
 - c) Administration in Education
Bachelor's Degree
 - ch) Family and social life
Bachelor's Degree

Social sciences

- Labor management
Diploma
- Management
Bachelor's Degree
- Management with emphasis in:
 - a) Financial administration
("Licenciatura")
(Only in Liberia)

TABLE Nº4.2

UNIVERSIDAD NACIONAL
GENERAL INFORMATION

GLOBAL BUDGET (In thousands of colones)	3.490.754.4
Number of students year 1992	13.188
Budget invested in research in 1992 (8,65% of total university budget)	243.596.117,09
Books copies (June 1993)	137.000
Titles of Magazines (June 1993)	17.000
Average number of daily requests at central library (June 1993)	800
Number of professors (June 1993)	1.247
Number of researchers (June 1993)	496
Research projects being implemented, 1993	350

ANNEXE N^o5

**UNIVERSIDAD ESTATAL A DISTANCIA
GENERAL INFORMATION**

TABLE Nº5.1

**UNIVERSIDAD ESTATAL A DISTANCIA
TITLES AND ACADEMIC DEGREES GRANTED**

The university has had a strong development in the diverse areas of study which are offered permanently in all University Centers throughout the country. The following list contains information on the area of studies, pre-degrees, degrees and graduate degrees granted.

AREA OF STUDIES	DEGREE GRANTED
Education with emphasis on I and II cycles (high school)	Diploma, Bachelor's Degree and "Licenciatura"
Business Administration with emphasis in Bank and Finance	Diploma, Bachelor's Degree & "Licenciatura"
Education with emphasis in Administration in Education	Bachelor's Degree and "Licenciatura"
Business management	Technician
Agricultural management	Diploma, Bachelor's Degree and "Licenciatura"
University studies	Diploma, Bachelor's Degree
Business Management with emphasis in Cooperatives and Associations	Diploma, Bachelor's Degree & "Licenciatura"
Health Services Management	Diploma, Bachelor's Degree & "Licenciatura"
Rehabilitation with emphasis in Trade	Bachelor's Degree
Education with emphasis in in Civic Education	"Licenciatura"
Business management with Accounting	Diploma, Bachelor's emphasis in Degree & "Licenciatura"
Business management with	Diploma, Bachelor's

emphasis in Organization	Degree & "Licenciatura"
Children's teaching	Technician in Integral attention to children Diploma in Integral attention to children Bachelor's Degree in Education with emphasis in Pre-school education "Licenciatura" in Education with emphasis in Children's social services management
Production and Agricultural communication	Bachelor's Degree
Agro-industry	Diploma, Bachelor's Degree
Computer Sciences in education	Bachelor's Degree, and "Licenciatura"
Professorship in teaching Mathematics	
Agricultural extension	Masters' Degree
Professorship in teaching Natural sciences	
Criminology	Bachelor's Degree
Business Administration with emphasis in Production Management	Diploma and Bachelor's Degree

N.T.: "Licenciatura" is a 5 years college level degree.

TABLE Nº5.2

UNIVERSIDAD ESTATAL A DISTANCIA
 GENERAL INFORMATION
 (Data for 1992)

Global budget (colones 1992)	1.257.749.195.13
Enrollment	
New students	10.705
Old students	2.607
	8.098
Percentage of women	63.8%
Percentage of students who work	65.8%
Total books in libraries	29.684
Books edited (1992)	248
Offset printings (in millions)	72.964
University centers	29
Number of officials	811
Full time	
Professionals	566
Staff	460
	361