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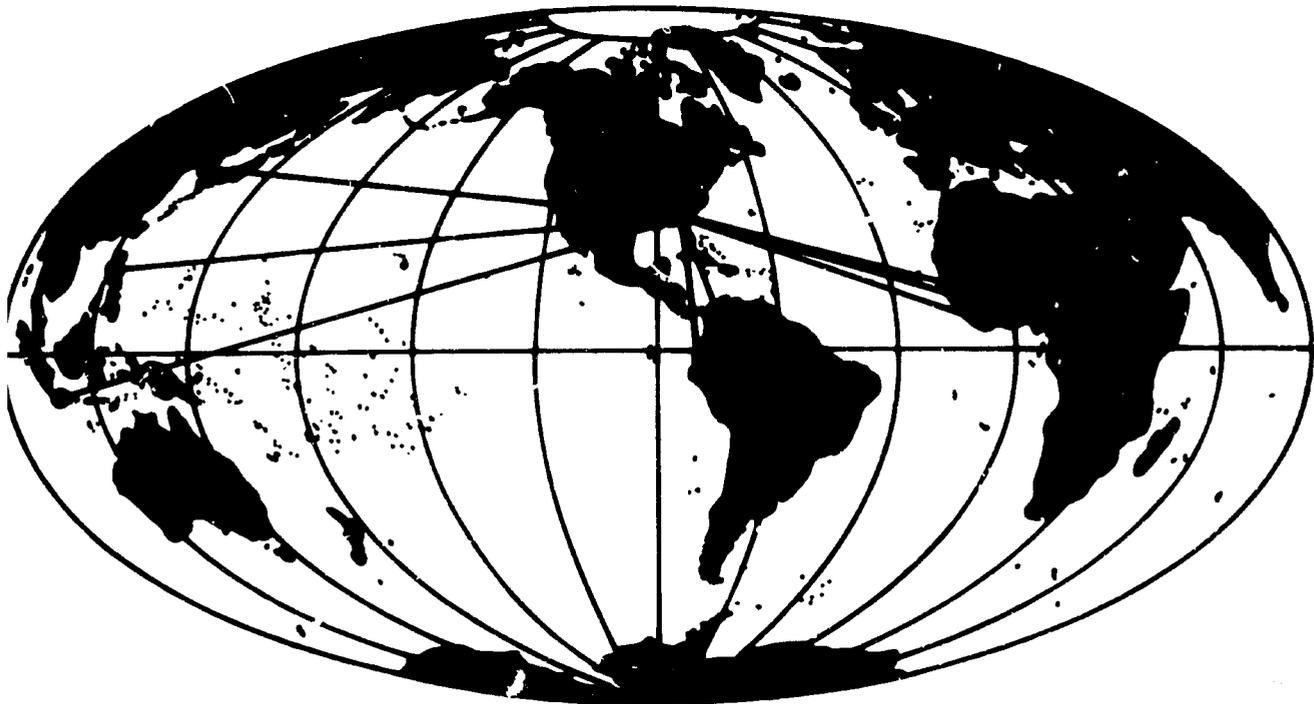
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EMPLOYMENT GENERATION THROUGH STIMULATION OF SMALL INDUSTRIES



SMALL-SCALE INDUSTRY DEVELOPMENT IN SOUTH SANTA CATARINA, BRAZIL

**GEORGIA INSTITUTE OF TECHNOLOGY
ATLANTA, GEORGIA 30332**

SMALL-SCALE INDUSTRY DEVELOPMENT IN SOUTH SANTA CATARINA, BRAZIL - A CASE HISTORY

Nelson C. Wall

February 1976. 112p.

**Georgia Institute of Technology
Engineering Experiment Station
Economic Development Laboratory
Atlanta, Georgia 30332**

The culmination of a 16-month research program on the development of small-scale industries in Brazil, this is the third such case study developed under an AID grant to Georgia Tech. (Others were on Paraguay and Ecuador.) On-site research, analysis, and support were provided by the Fundacao Educacional do Sul de Santa Catarina (FESSC), with which Georgia Tech has a counterpart agreement.

The report begins with overviews of Brazil and of South Santa Catarina State, summarizing their historical, geographical, population, social, agricultural, industrial, trade, and infrastructure perspectives. Previous national and regional development plans are discussed, as well as the present development plan for South Santa Catarina. The report also describes the small-scale industry development program designed and conducted by FESSC and presents case histories of five small industries in South Santa Catarina that have received management and technical assistance from FESSC.

**SMALL-SCALE INDUSTRY DEVELOPMENT
IN SOUTH SANTA CATARINA, BRAZIL**

A Case History

Prepared for the
U. S. Agency for International Development

by
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Fundação Educacional do Sul de Santa Catarina

Economic Development Laboratory
Engineering Experiment Station
GEORGIA INSTITUTE OF TECHNOLOGY
Atlanta, Georgia 30332
February 1976

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Foreword

The Economic Development Laboratory (EDL) of the Engineering Experiment Station at the Georgia Institute of Technology, through its International Programs Division, has recently completed a 16-month research program on the development of small-scale industries in Brazil. This is the third such case study developed under an Agency for International Development (AID) grant to the Georgia Institute of Technology.

This case history was initiated in April 1974 and completed in February 1976. Much of the credit goes to Eco. Jose Müller, who headed the Fundação Educacional do Sul de Santa Catarina (FESSC) research team. The author depended on them for all of the on-site research, and although he visited Brazil many times during that 16-month period, it was the FESSC staff who provided the continuous field research, analysis, data collection, and overall support to his work.

Hopefully, this case study will serve to highlight the fact that a small group of well-trained professionals can provide invaluable assistance to small-scale industries in a given geographic area. It is also possible that other researchers may become interested in the subject of small-scale industry development after reading this case history. As always, comments, questions, and suggestions from interested readers will be greatly appreciated.

Nelson C. Wall, Chief
International Programs Division
Economic Development Laboratory
Engineering Experiment Station

Summary

Brazil is nearly one half the size of all of South America. Its population of nearly 100 million, estimated by 1975, is concentrated in the central plateau and a narrow coastal plain following the coastline of the Atlantic Ocean. Since 1951, the government of Brazil has been attempting to solve the various economic development problems it faces, and to some extent plans have been implemented to assist the small-scale industry sector.

The rate of economic growth was relatively high during the late fifties. It then slowed down during the early sixties and again picked up momentum after the changes in government during the mid-sixties. As a result of this, the manufacturing sector has developed to the point where Brazil is self-sufficient in steel, vehicles, consumer durables, and most types of machinery. This level of development permits Brazil to export vehicles, chemicals, iron and steel products, electrical machinery, and other sophisticated products.

Several national economic development programs are reviewed in this study. A detailed presentation is made of the II Plano Nacional de Desenvolvimento (PND), 1975-1979, which calls for ambitious goals in all areas, including national per capita income, gross national product, economically active population, and exports.

This case history is based on research carried out by the author, both on-site and in Atlanta, in an attempt to obtain a firsthand picture of the situation of small-scale industries in a geographic area of Brazil. In summary, the findings of this study indicate that over 90% of all industrial establishments in Brazil fall into the small-medium industry classification. These establishments employ over 60% of all the industrial workers and generate over 50% of the value added by manufacture.

The II PND, much as other previous programs, places great emphasis on macro-economy planning and, in terms of industrial development, this means large industrial complexes. Little, if anything, is being done in a systematic manner at the micro-level to assist the small-scale industry sector. One of the few exceptions to this is the work being carried out by the Fundação Educacional do Sul de Santa Catarina (FESSC), which is presented in this study. Five small industries which have been assisted by FESSC are reviewed in this case history to demonstrate what can be done by a handful of persons who are willing to implement a program of technical assistance to small-scale industries.

BRAZILIAN ABBREVIATIONS USED IN THIS REPORT

| | |
|-----------|---|
| ACARESC | - Associação de Crédito e Assistência Rural do Estado de Santa Catarina |
| ACARPESC | - Associação de Crédito e Assistência Pesqueira de Santa Catarina |
| AMSESC | - Associação dos Municípios do Sul do Estado de Santa Catarina |
| AMUREL | - Associação dos Municípios da Região de Laguna |
| BADESC | - Banco de Desenvolvimento do Estado de Santa Catarina |
| BNDE | - Banco Nacional do Desenvolvimento Econômico |
| BNH | - Banco Nacional de Habitação |
| BRDE | - Banco Regional de Desenvolvimento do Extremo Sul |
| CARS | - Centro Administrativo Regional de Saúde |
| CASAN | - Companhia de Águas e Saneamento |
| CCM | - Conselho Comunitário Municipal |
| CCMR | - Conselho Comunitário Microrregional |
| CDMRM | - Coordenação do Desenvolvimento Microrregional e Municipal |
| CEAG/SC | - Centro de Assistência Gerencial de S. C. (ex-IBAGESC) |
| CEBRAE | - Centro Brasileiro de Assistência Gerencial à Pequena e Média Empresa |
| CELESC | - Centrais Elétricas de Santa Catarina |
| CENAFOR | - Centro Nacional de Aperfeiçoamento de Pessoal para Formação Profissional |
| CEP | - Centro de Educação Permanente/FESSC |
| CICIT | - Centro Intercolegial Integrado de Tubarão |
| CIPASC | - Companhia Catarinense de Conservação e Industrialização de Produtos Agrícolas |
| CIRPRO | - Curso Intensivo de Preparação de Professores |
| CIS | - Centro Intercolegial de Segundo Grau/PREMEN |
| CM | - Contribuição de Melhoria |
| COCAR | - Companhia Catarinense de Comércio e Armazenamento |
| COHAB/SC | - Companhia de Habitação de Santa Catarina |
| CPRM | - Companhia de Pesquisa de Recursos Minerais |
| CRE/SC | - Coordenadoria Regional de Educação do Estado de Santa Catarina |
| CURA | - Comunidade Urbana para Recuperação Acelerada |
| DDO | - Discagem Direta à Operadora |
| ex-DEATUR | - Departamento Autônomo de Turismo |
| DECP | - Departamento Estadual de Caça e Pesca |

| | |
|-----------|---|
| DEE/SC | - Departamento Estadual de Estatística de Santa Catarina |
| DER | - Departamento de Estradas de Rodagem |
| DNER | - Departamento Nacional de Estradas de Rodagem |
| DNOS | - Departamento Nacional de Obras e Saneamento |
| DPD | - Departamento de Pesquisas e Desenvolvimento/FESSC |
| EDL | - Economic Development Laboratory/EES |
| EMBRAPA | - Empresa Brasileira de Pesquisa Agropecuária |
| EMPASC | - Empresa Catarinense de Pesquisa Agropecuária |
| EMBRATER | - Empresa Brasileira de Assistência Técnica e Extensão Rural |
| EMBRATUR | - Empresa Brasileira de Turismo |
| EMCATER | - Empresa Catarinense de Extensão e Assistência Técnica Rural |
| ERUSC | - Eletrificação Rural de Santa Catarina S. A. |
| FAS | - Fundo de Apoio ao Desenvolvimento Social |
| FATMA | - Fundação de Amparo à Tecnologia e ao Meio-Ambiente |
| FDAE | - Fundo de Desenvolvimento de Áreas Estratégicas |
| FDPI | - Fundo de Desenvolvimento de Programas Integrados |
| FDU | - Fundo de Desenvolvimento Urbano |
| FESSC | - Fundação Educacional do Sul de Santa Catarina |
| FETRAN | - Subprograma de Financiamento para Sistemas Ferroviários de Transporte Urbano de Passageiros |
| FGT | - Fundação Gaúcha do Trabalho |
| FGV | - Fundação Getúlio Vargas |
| FIBGE | - Fundação Instituto Brasileiro de Geografia e Estatística |
| FIDREN | - Financiamento de Sistemas de Drenagem |
| FIEP | - Financiamento de Equipamentos Comunitários Públicos |
| FIEPAR | - Financiamento de Equipamentos Comunitários Particulares |
| FINANSA | - Programa de Financiamento para Saneamento |
| FINC | - Financiamento para Urbanização de Conjuntos Habitacionais |
| FINEP | - Financiadora de Estudos e Projetos |
| FINURB | - Financiamento para Urbanização |
| FIPLAN | - Fundo de Financiamento de Planos de Desenvolvimento Local Integrado |
| FITURB | - Financiamento para o Transporte Urbano |
| FLBA | - Fundação Legião Brasileira de Assistência |
| FNDCT/GNP | - Fundo Nacional de Desenvolvimento Científico e Tecnológico/ Conselho Nacional de Pesquisas |
| FPM | - Fundo de Participação dos Municípios |
| FRISULCA | - Frigorífico Sul Catarinense S. A. |

| | |
|------------|---|
| FUCAT | - Fundação Catarinense do Trabalho |
| FUCRI | - Fundação Educacional de Criciúma |
| FUNDIPRA | - Fundo de Desenvolvimento da Industrialização de Produtos Agropecuários e de Pesca |
| FUNINSO | - Fundo para Investimentos Sociais |
| FUNRURAL | - Fundo de Assistência e Previdência ao Trabalhador Rural |
| FUNTEC | - Fundo de Desenvolvimento Técnico - Científico |
| ex-IBAGESC | - Instituto Brasileiro de Assistência Gerencial à Pequena e Média Empresa de Santa Catarina |
| IBDF | - Instituto Brasileiro de Desenvolvimento Florestal |
| ICC | - Indústria Carboquímica Catarinense S. A. |
| ICM | - Imposto sobre Circulação de Mercadorias |
| INCRA | - Instituto Nacional de Colonização e Reforma Agrária |
| INPS | - Instituto Nacional de Previdência Social |
| IPEA | - Instituto de Planejamento Econômico e Social |
| IPESC | - Instituto de Previdência do Estado de Santa Catarina |
| IPHAN | - Instituto do Patrimônio Histórico e Artístico Nacional |
| IPTU | - Imposto Predial e Territorial Urbano |
| ISS | - Imposto sobre Serviços |
| MOBRAL | - Movimento Brasileiro de Alfabetização |
| ODD | - Operadora Disca à Distância |
| OMS | - Organização Mundial da Saúde |
| PDDI | - Plano Diretor de Desenvolvimento Integrado |
| PDU | - Plano Diretor Urbano |
| PEA | - População Economicamente Ativa |
| PIPMO | - Programa Intensivo de Preparação de Mão-de-Obra |
| II PND | - II Plano Nacional de Desenvolvimento |
| POC | - Projeto de Organização Comunitária do Litoral Sul de Santa Catarina |
| PORTOBRÁS | - Empresa de Portos do Brasil S. A. |
| PRFEM/MEC | - Programa de Expansão e Melhoria do Ensino do Ministério de Educação e Cultura |
| PROGIT | - Programa do Instituto Tecnológico da Geórgia |
| RECON | - Financiamento ou Refinanciamento do Consumidor de Materiais de Construção |
| REFINAG | - Financiamento ou Refinanciamento de Abastecimento de Água |

| | |
|-----------|---|
| REFINESG | - Financiamento ou Refinanciamento de Sistemas de Esgotos |
| REGIR | - Financiamento ou Refinanciamento do Capital de Giro do Produtor de Materiais de Construção |
| REINVEST | - Financiamento ou Refinanciamento do Investimento no Ativo Fixo das Empresas Produtoras, Transportadoras e Distribuidoras de Materiais de Construção |
| SAREM | - Secretaria de Articulação com os Estados e Municípios |
| SATC | - Sociedade de Assistência aos Trabalhadores de Carvão |
| ex-SDE/SC | - Secretaria de Desenvolvimento do Estado de Santa Catarina |
| SEMA | - Secretaria Especial do Meio-Ambiente |
| SENAC | - Serviço Nacional de Aprendizagem Comercial |
| SENAI | - Serviço Nacional de Aprendizagem Industrial |
| SENAM | - Serviço Nacional dos Municípios |
| SEPLAN | - Secretaria de Planejamento da Presidência da República |
| SERFHAU | - Serviço Federal de Habitação e Urbanismo |
| SESC | - Serviço Social do Comércio |
| SESI | - Serviço Social da Indústria |
| SUBIN | - Secretaria de Cooperação Econômica e Técnica Internacional |
| SUDEPE | - Superintendência de Desenvolvimento da Pesca |
| SUDESUL | - Superintendência do Desenvolvimento da Região Sul |
| TPP | - Taxa de Poder de Polícia |
| TPS | - Taxa de Prestação de Serviços |
| TURESC | - Empresa Catarinense de Turismo |
| TURISUL | - Associação de Turismo da Região Sul |
| TURLAG | - Associação Turística da Região de Laguna |
| UFSC | - Universidade Federal de Santa Catarina |
| USAID-USA | - Agência para o Desenvolvimento Internacional dos Estados Unidos |

OVERVIEW OF THE FEDERATIVE REPUBLIC OF BRAZIL

Brazil is attempting to become a modern industrial society and, hopefully, a model of competitive economy. There is no doubt that this is a young nation; yet, for the past five years, it has maintained a very high rate of growth and is compared by some authors with Japan in its industrial development. According to the II National Development Plan (PND II), 1975-1979, the per capita income for the Brazilian population will reach \$1,000 by 1977. The estimates for 1977 indicate an internal gross product of about \$100 billion. The industrial sector today is producing many sophisticated goods, such as automobiles, ships, machinery and equipment, electrical and electronic devices, chemical products, and precision instruments, to name a few. In order to provide more details, in this chapter individual topics will be expanded in an attempt to present a general background on this nation.

Historical Summary

It was Prince Henry "The Navigator" who, obsessed with new land discoveries, pushed the then small Portuguese sailing boats further out into the Atlantic in search of new lands. Nearly a century later, 1497-1498, Vasco da Gama was opening up the new sea route to India by going around the Cape of Good Hope. Early in March of the year 1500, a fleet of 13 armed vessels and caravels started what turned out to be one of the most favorable naval experiences of Portugal. Under the leadership of the Portuguese navigator Pedro Alvarez Cabral, the fleet crossed the Atlantic in 42 days and accidentally discovered Brazil on the 22nd day of April 1500.^{1/} From that point in time until September 7, 1822, when Brazil gained its independence, many different phases of colonization and economic development were experienced. During the early years of colonization, the small number of Portuguese that settled in Brazil were insufficient to avoid the constant landing of other European navigators along the very extensive coastline. These men came seeking mainly the "brazilwood" which was used in Europe for manufacture of color pigments and, thus, created the first stage of economic development of this nation. In view of the problem, Portugal decided to settle its new land and expel the other intruders.

^{1/} Vera Jane Gilbert, The American Indian and the Colonization of Brazil, Monograph of the Instituto Historico e Geografico do Rio Grande do Norte, São Paulo, Brazil, 1974.

To accomplish this, a series of fortresses were built, towns were established, and the cultivation of sugarcane was initiated. One needs to remember that the eastern coast of Brazil was entirely different from Spanish America. Here none of the cultural advancements and artistic treasures of the well-known Aztec and Inca empires were to be found by the settlers. Brazil was then wild, primitive land. The Portuguese colonizers had to cultivate the land that they had discovered. Soon the rich soil of the bays at Pernambuco, Bahia, Rio de Janeiro, São Vicente, and Santos were planted in sugarcane and tobacco, and these activities expanded rapidly to meet the never-ending demand of the European market.

At first, the land area was divided by the Portuguese Crown into "hereditary captaincies," most of which extended 50 to 60 leagues along the coast and ran inland to the imaginary demarcation line established in 1494 by the Treaty of Tordesillas between Spain and Portugal.^{1/}

From the early periods until about the end of the 16th Century, the settlers were limited to living near the coast, if for no other reason, as a means of survival. Inland Brazil was then populated by large tribes of cannibals, among which the Tupinambas were probably the strongest. The Jesuit Order, supported by the Portuguese Governors, did much to help stamp out this practice of eating human flesh, and by the end of the 16th Century the tribes had settled down to living peaceably with the Portuguese settlers.

Toward the end of the 17th Century, armed expeditions, organized as military units known as "Bandeiras" (standard bearers), proceeded to explore inland looking mainly for two things: (1) Indian labor to be brought back and sold as slaves to the plantations and (2) gold, silver, and other precious objects. When gold was found in the area of what was then called Minas Gerais (General Mines), a gold rush was started. This became so well known that in 1710 a French expedition under Jean François du Clerc tried to take Rio de Janeiro, the port from which most of the gold was being shipped to Portugal.^{2/} It is

^{1/} According to the Treaty of Tordesillas, all lands west of a line 370 leagues from the Cape Verde Islands would belong to Spain and all the land east of that line would belong to Portugal.

^{2/} Herculano Gomez Mathias, The Gold Area in Brazil, Monograph of the Instituto Historico e Geografico Brasileiro, São Paulo, Brazil, 1974.

estimated that between the year 1500 and 1803 some 194 million pounds sterling in gold were delivered to Portugal representing the royal "one-fifth" taxation.

Brazil became a republic on November 15, 1889. Subsequently, the large groups of immigrants from Italy, Germany, and Japan, which until then had been slowly entering Brazil, began to enter industrial activities as well as the ever-present coffee industry. The immigrants integrated well into the existing life patterns and helped form what is Brazil today. Before discussing details of present-day Brazil, it may be of interest to briefly review the names given to the vast territory which was originally considered to be an island and which today is called Brazil.

The Island

The Land of the True Cross

Province of the Holy Cross (1500-1548)

State of Brazil (1548-1639)

Principality of Brazil (1645-1815)

Kingdom of Brazil (1815-1822)

Empire of Brazil (1822-1889)

Republic of the United States of Brazil (1889)

Federative Republic of Brazil (Present)

In the past 30 years, the following men have governed the nation:

José Linhares (October 29, 1945, to January 31, 1946). At the time of the fall of the Getulio Vargas government in 1945, the Armed Forces turned the government over to the then Minister, José Linhares. His was a transitional government with the main objective of assuring internal peace and calling for elections.

Eurico Gaspar Dutra (January 31, 1946, to January 31, 1951). General Dutra won the elections and came into office for the constitutional five-year period. His administration was faced with the recession that followed World War II. During his government, Brazil adopted on September 18, 1946, its fifth constitution.

Getulio Vargas (January 31, 1951, to August 24, 1954). The political struggle within the two major parties caused the electoral election of Mr. Vargas. During his administration, the state company of Petroleo Brasileiro S. A. (Petrobras) was established. This organization took over all oil drilling, refining, and marketing activities that until then had been carried out by

foreign companies. In spite of rigid financial controls, inflation was at a very high rate. Currency circulation increased from 31 billion to 50 billion cruzeiros. On August 24, 1954, President Vargas committed suicide and the elected Vice President took office.

João Café Filho (August 24, 1954, to November 11, 1955). His main concern was to have general elections and complete the term of office following the death of President Vargas. For reasons of ill health, President Filho stepped down and the then President of the House of Representatives took office as interim President, only to be deposed shortly after on November 11, 1955, by the Armed Forces.

Nereu Ramos (November 11, 1955, to January 31, 1956). The Armed Forces turned the government over to the President of the Senate to act as a caretaker until the elected President, J. Kubitschek, could assume office in accordance with the Constitution. In the meantime, President Filho, having recovered from his illness, tried to return to office, but was not allowed to do so by Congress.

Juscelino Kubitschek (January 31, 1956, to January 31, 1961). He assumed office in the midst of a powerful political confrontation, and his first few months in office were extremely difficult. His government was greatly concerned with infrastructure; many highways were built, as well as power transmitters and other installations. The start of the automotive industry occurred during his administration, as well as the building of Brasilia, the new capital of Brazil.

Janio Quadros (January 31, 1961, to August 25, 1961). Mr. Quadros won the presidential election by a large margin and took office. His election was indicative of the change taking place in the population at that time. During his brief government, Brazil established diplomatic relations with the U.S.S.R., and Ernesto "Che" Guevara received the highest Brazilian decoration, "Order of Cruzeiro do Sul."

Ranieri Mazzili (August 26, 1961, to September 7, 1961). At this point in time, the elected Vice President under Mr. Quadros, who was João Goulart, was out of the country; consequently, when President Quadros resigned on August 25, 1961, the President of the House of Representatives, Mr. Mazzili, took office as President of Brazil.

João Goulart (September 7, 1961, to March 31, 1964). After Congress approved a constitutional change, Mr. Goulart (elected Vice President with

Mr. Quadros) came into office. His administration saw to the creation of a national power company (ELETROBRAS), a national telecommunication company (EMBRATEL), and other large development programs. The political struggle continued throughout this period of time and, finally, the government fell.

Ranieri Mazzili (April 2, 1964, to April 15, 1964). Again the President of the House of Representatives, Mr. Mazzili, was asked to assume the Presidency of the Republic and try to settle the existing political differences. During his brief term of office and under a Special Institutional Decree, over 40 members of the House of Representatives were impeached and the previous two presidents were disfranchised for a period of 10 years. The National Congress then elected Field Marshal Castello Branco to the Presidency.

Humberto de Alencar Castello Branco (April 15, 1964, to March 15, 1967). This was the first "Government of the Revolution," and its main objective was to clean house, do away with graft and corruption, and establish an orderly government. In addition, inflation was destroying the economy and Brazil was in need of financial and economic reconstruction. This administration created the Central Bank and the Monetary Fund, among many other reforms. Large industrial development programs were also initiated during this period of time.

Arthur da Costa e Silva (March 15, 1967, to August 31, 1969). President Costa e Silva continued with the program started by Castello Branco. Nearly all the regional development agencies, i.e., SUDESUL, SUDECO, and others, were established during this period of time. For reasons of poor health, President Costa e Silva resigned and turned the government over to the Cabinet.

Military Junta (August 31, 1969, to October 30, 1969). The Junta (three men) took the government over to assure the population that peace and tranquility would continue. The 1969 Constitution was written and came into effect during this phase of government.

Emilio Garrastazu Médici (October 30, 1969, to March 15, 1974). He continued the general policy defined in 1964 by the revolution and did much to reestablish the financial structure of the nation. The previously created Regional Development Agencies came into their own and were greatly supported by the government.

Ernesto Geisel (March 15, 1974, to March 15, 1979). General Geisel is presently governing within the party philosophy, continuing to develop the

nation in every manner. The past 10 years of the "Government of the Revolution" have allowed Brazil to develop in an unbelievable manner. The truth of the matter is that now Brazil has assumed the leadership in Latin America.

Geographical Summary

Brazil, with a land area of about 8,511,355^{1/} square kilometers, is the fifth largest nation in the world, following the U.S.S.R., Canada, China, and the United States of America. Its population of nearly 100 million inhabitants makes it the seventh most populous nation, following China, India, U.S.S.R., U.S.A., Indonesia, and Japan. From north to south, there are 4,320 kilometers between the Caburaí Mountains and the Chuí River; from east to west, there are 4,328 kilometers from the land's end at Ponta Seixas to the Contamana Mountains. The country borders with all nations of South America except Chile and Ecuador. The coastline of the Atlantic runs for a total of 7,408 kilometers. (Map 1 gives a general view of Brazil.)

This huge land area is divided into 22 states, four territories, and one federal district; all of this area is generally considered as five regions, as follows:

North Region. The states of Acre, Amazonas and Pará, together with the territories of Rondônia, Roraima, and Amapá.

Northeast Region. The states of Maranhão, Piauí, Ceará, Rio Grande do Norte, Paraíba, Pernambuco, Alagoas, Sergipe, and Bahia, together with the territory of Fernando do Noronha.

Southeast Region. Made up of the states of Espírito Santo, Rio de Janeiro, Minas Gerais, and São Paulo.

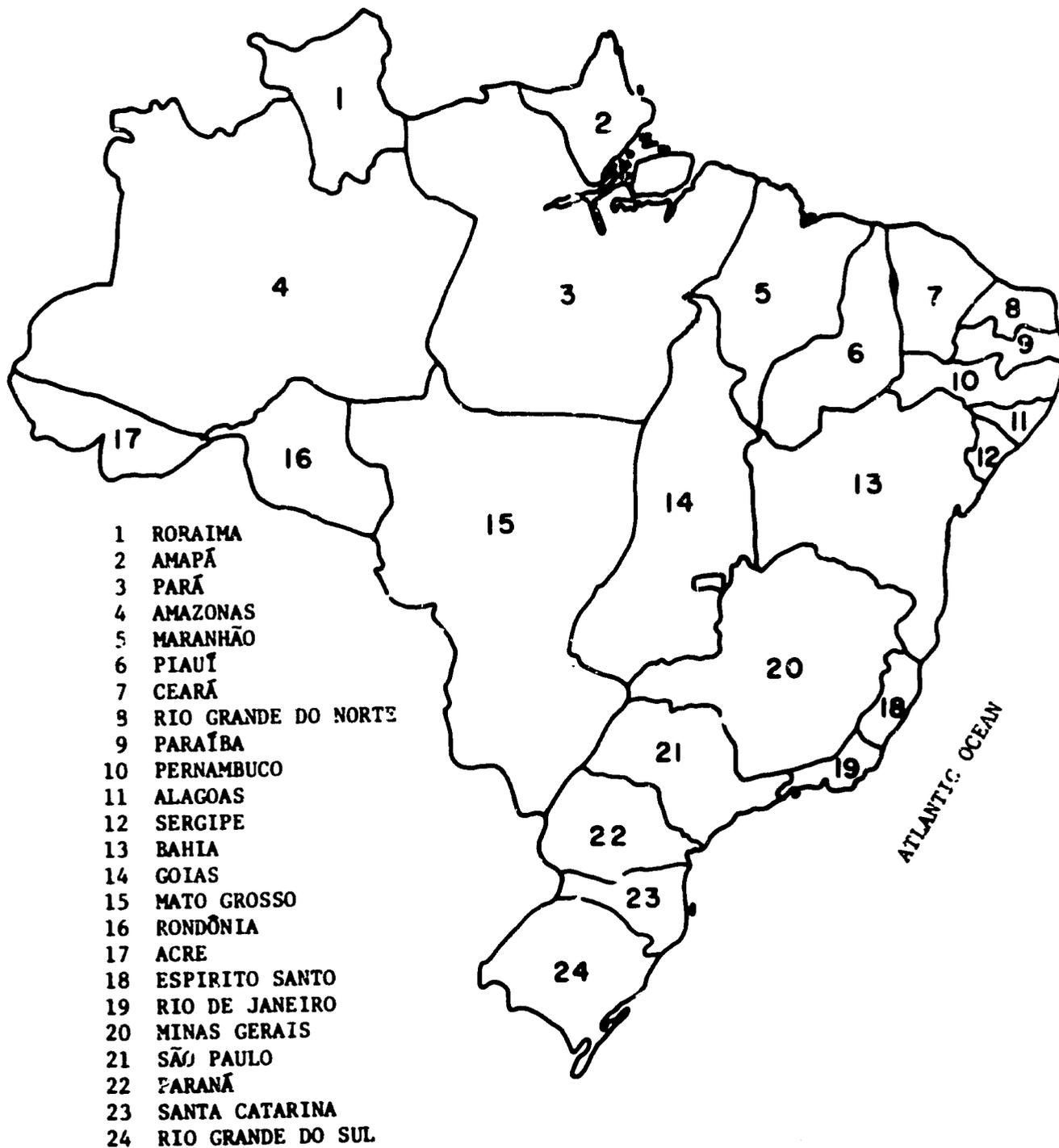
South Region. Comprises the states of Paraná, Santa Catarina, and Rio Grande do Sul.

Mid-West Region. Contains the states of Mato Grosso and Goiás, as well as the Federal District of Brasilia, where the capital of Brazil was established on April 21, 1960.

These five different geographic regions have their individual climates and characteristics. All show an endless sequence of natural beauties, such as the

^{1/} Flavi Cavalcanti, Brasil em Dados, Banco de Dados, Rio de Janeiro, Brazil, 1971, pp. 7-9.

Map 1
STATES OF BRAZIL
1974



network of rivers and igarapés (narrow streams), common to the North Region, the beauty of the Atlantic coastline in the area of the Northeast, the mountain ranges of the Southeast, and the plains of the South region.

Population Summary

With a total population in 1971 of 92.23 million inhabitants, Brazil continues to grow rapidly. Its 1975 population is estimated to have reached the 100 million benchmark. On the basis of the 1971 figures, resulting from the 1970 Census of Population, the average population density was 11 persons per square kilometer, as compared to the average world figure of 26 persons per square kilometer. (Table 1 provides details of population concentration by states and regions of Brazil for the year 1971.)

Brazil maintains a population growth rate of about 2.8% per year,^{1/} which is fairly high but not the highest in Latin America. Colombia has a 3.2% growth, Mexico has 3.4%, and Venezuela has 3.5%. On the basis of the present 2.8% growth figure, Brazil will have 125 million inhabitants by 1980 and 200 million by the year 2000.^{2/} This population is young; about 37 million persons (about two fifths of the total) are under 15 years of age, of whom nearly 13 million are under five years old.

The major problem concentration continues to be in the southern portion of the nation. About 55% of the total population lives in urban areas and only 45% continue to inhabit the rural areas. There are at least 32 municipalities in Brazil with over 200,000 inhabitants; of these, some like São Paulo and Rio de Janeiro are well over the five million mark.

At the time of the 1970 census of Brazil, the rural-urban and urban-urban migration was showing some very high benchmarks. Table 2 indicates the 11 major cities of Brazil with populations of well over 500,000 inhabitants.

In summary, Brazil currently has a population close to 100 million inhabitants, most of whom are living in urban areas. This ethnic mix of American Indian, black, Portuguese, and other European origins has developed into the "Brazilian" population. They are a very dynamic group of people, willing to

^{1/} Luis Felipe da S. Wiegemann, Brasil Realidade e Desenvolvimento, Sugestões Literárias S. A., São Paulo, Brazil, 1973, p. 31.

^{2/} Op. cit., p. 31.

Table 1

LAND AREA AND POPULATION OF THE STATES AND TERRITORIES OF BRAZIL, 1971

| <u>State or Territory</u> | <u>Area</u> | | <u>Population</u> | |
|---------------------------|-----------------------|-------------------------|-------------------|-------------------------|
| | <u>km²</u> | <u>Percent of Total</u> | <u>Actual</u> | <u>Percent of Total</u> |
| <u>North Region</u> | | | | |
| Rondônia | 243,044 | 2.86 | 95,311 | 0.10 |
| Acre | 152,589 | 1.79 | 203,900 | 0.22 |
| Amazonas | 1,558,987 | 18.38 | 714,803 | 0.77 |
| Roraima | 230,104 | 2.70 | 40,855 | 0.04 |
| Pará | 1,227,530 | 14.66 | 1,984,745 | 2.15 |
| Amapá | 139,068 | 1.65 | 116,481 | 0.13 |
| <u>Northeast Region</u> | | | | |
| Maranhão | 324,616 | 3.86 | 2,883,211 | 3.13 |
| Piauí | 250,934 | 2.95 | 1,735,568 | 1.88 |
| Ceará | 146,817 | 1.74 | 4,440,286 | 4.81 |
| R. G. do Norte | 53,015 | 0.62 | 1,603,094 | 1.71 |
| Paraíba | 56,372 | 0.66 | 2,383,518 | 2.58 |
| Pernambuco | 98,281 | 1.16 | 5,208,011 | 5.67 |
| Alagoas | 27,652 | 0.33 | 1,606,165 | 1.74 |
| Fernando do Noronha | 25 | 0 | 1,239 | 0 |
| Sergipe | 21,994 | 0.26 | 900,119 | 0.98 |
| Bahia | 559,951 | 6.59 | 7,420,906 | 8.05 |
| <u>Southeast Region</u> | | | | |
| Minas Gerais | 582,586 | 6.90 | 11,279,872 | 12.23 |
| Espírito Santo | 45,597 | 0.53 | 1,597,389 | 1.73 |
| Rio de Janeiro | 42,134 | 0.50 | 4,694,089 | 5.09 |
| Guanabara | 1,171 | 0.02 | 4,296,782 | 4.66 |
| São Paulo | 247,320 | 2.91 | 17,716,186 | 19.21 |
| <u>South Region</u> | | | | |
| Paraná | 199,060 | 2.34 | 6,741,520 | 7.31 |
| Santa Catarina | 95,483 | 1.13 | 2,911,479 | 3.16 |
| R. G. do Sul | 267,528 | 3.32 | 6,652,618 | 7.04 |
| <u>Mid-West Region</u> | | | | |
| Mato Grosso | 1,231,549 | 14.47 | 1,475,117 | 1.60 |
| Goiás | 642,036 | 7.54 | 2,989,414 | 3.14 |
| Distrito Federal | 5,771 | 0.07 | 544,862 | 0.59 |
| BRASIL | 8,456,508 | 100.00 | 92,237,570 | 100.00 |

Source: Flávio Cavalcanti, Brasil em Dados, O Banco de Dados, Rio de Janeiro, GB, Brazil, 1971, p. 11.

Table 2
MUNICIPALITIES WITH OVER 500,000 INHABITANTS IN 1970

| <u>Municipality</u> | <u>Population</u> <u>1970</u> | <u>Percent of Total Population</u> | | |
|---------------------|----------------------------------|------------------------------------|-------------|-------------|
| | | <u>1950</u> | <u>1960</u> | <u>1970</u> |
| São Paulo | 5,978,977 | 3.89 | 5.39 | 6.34 |
| Guanabara | 4,315,746 | 4.59 | 4.66 | 4.57 |
| Belo Horizonte | 1,255,415 | 0.68 | 0.98 | 1.33 |
| Recife | 1,084,459 | 1.01 | 1.12 | 1.15 |
| Salvador | 1,027,142 | 0.80 | 0.92 | 1.09 |
| Porto Alegre | 903,175 | 0.76 | 0.90 | 0.96 |
| Fortaleza | 872,702 | 0.56 | 0.73 | 0.93 |
| Nova Iguaçu | 731,814 | 0.28 | 0.51 | 0.78 |
| Belem | 642,514 | 0.49 | 0.57 | 0.68 |
| Curitiba | 624,362 | 0.35 | 0.51 | 0.66 |
| Distrito Federal | 546,015 | - | 0.20 | 0.58 |

Source: Luis Felipe da S. Wiedemann, Brasil Realidade e Desenvolvimento, Sugestões Literárias S. A., São Paulo, Brazil, 1973, p. 49.

accept changes, and are in the most explosive development process in Latin America.

Social Summary

Brazil, much as other developing nations, is going through a phase of "growing pains." The government is aware of the present needs, but it is limited in what it can do. In general, the health of the population is considered good, but in need of constant attention. One of the main problems is drinking water. The government is giving a high priority to the provision of drinking water and drain sewerages for the population. According to figures issued by official agencies, in 1967 about half of the existing municipalities had their own water systems. Great limitations in this type of service continue to be recognized in areas such as the Northeast.

In spite of the great growth of Brazil, the government still acknowledges that there are serious shortcomings in the area of public health. At this time, it is calculated that there are 3.6 hospital beds for every 1,000 inhabitants.

For many years, this nation has recognized the need for a well-planned educational program. In 1970, the government of Brazil invested 5% of the total gross national product to education. There are well over 140,000 primary schools and over one-quarter million classrooms. Yet, this is not enough to take care of the present-day demand. There are also over one-quarter million students distributed over some 800 centers of higher education. It is not unusual to encounter 20 applicants per available registration (as in the case of the Faculty of Medicine) at the university level. At present, there are 48 universities in Brazil capable of registering 110,000 students, but they usually encounter some 200,000 applicants. Table 3 provides some details on this subject.

Table 3
UNIVERSITY REGISTRATIONS, BRAZIL, 1970

| <u>Year</u> | <u>Population Brazil</u> | <u>High School Graduates</u> | <u>University Applicants</u> | <u>Students University Registration</u> |
|-------------|------------------------------|----------------------------------|----------------------------------|---|
| 1962 | 74,100,000 | 83,000 | 74,000 | 48,000 |
| 1963 | 76,400,000 | 98,000 | 82,000 | 52,000 |
| 1964 | 78,800,000 | 112,000 | 95,000 | 56,000 |
| 1965 | 81,300,000 | 125,000 | 111,000 | 59,000 |
| 1966 | 83,900,000 | 144,000 | 128,000 | 69,000 |
| 1967 | 86,600,000 | 176,000 | 152,000 | 81,000 |
| 1968 | 89,400,000 | 228,000 | 173,000 | 102,000 |
| 1969 | 92,300,000 | 242,000 | 198,000 | 110,000 |

Source: Flavio Cavalcanti, Brasil em Dados, O Banco de Dados, Rio de Janeiro, GB, Brazil, 1971, p. 7.

As part of this educational process, nearly all centers of higher education are also offering post-graduate courses and continuing education programs. All this creates a great demand for books and other types of publications. In 1970, there were over 12,000 libraries and reading rooms in Brazil. Just to give the reader an example, in 1967 over 2 million books were printed in the area of "technology," with over 65,000 additional pamphlets on the same general subject.

Perhaps one of the biggest social problems in Brazil is housing. The II Pan-American Congress on Housing established that in Latin America some 70 million persons are in need of housing, of whom some 40 million live in Brazil. Table 4 provides a summary of the housing demand in Brazil.

Table 4
HOUSING DEMAND, BRAZIL, 1970
(in thousands)

| Year | Regional Demand | | | | | Brazil Total |
|------|-----------------|----------------|----------------|-------|--------------|-----------------|
| | North | North- east | South- east | South | Mid- West | |
| 1967 | 24.5 | 181.4 | 302.3 | 98.5 | 28.3 | 635.0 |
| 1968 | 25.6 | 187.5 | 309.7 | 101.9 | 29.3 | 654.0 |
| 1969 | 26.6 | 193.7 | 317.1 | 105.2 | 30.4 | 673.0 |
| 1970 | 27.6 | 200.1 | 325.0 | 108.6 | 31.7 | 693.0 |
| 1971 | 28.6 | 206.8 | 326.6 | 112.1 | 32.9 | 713.0 |
| 1972 | 29.9 | 213.7 | 340.4 | 115.7 | 34.3 | 734.0 |
| 1973 | 31.0 | 220.5 | 348.6 | 119.3 | 35.3 | 755.0 |
| 1974 | 32.2 | 222.0 | 356.6 | 123.2 | 37.0 | 777.0 |
| 1975 | 33.3 | 235.0 | 364.8 | 126.9 | 38.5 | 799.0 |
| 1976 | 34.8 | 243.0 | 373.4 | 130.8 | 40.0 | 822.0 |

Source: Flavio Cavalcanti, Brasil em Dados, O Banco de Dados, Rio de Janeiro, GB, Brazil, 1971, p. 129.

The various national housing agencies have been trying to cope with the problem, but in spite of having financed over 700,000 homes in 1971, for instance, the demand continues to be very high.

Agricultural Summary

The production of agricultural commodities continues to be of utmost importance to the economy of Brazil. Agricultural production did not grow as much as was forecasted in 1973, but it did increase by 3.5%, while industry experienced a 15% increase and services went up 13%.^{1/} World shortages and

^{1/} Associação de Exportadores Brasileiros, Brasil 74, Bloch Editores S. A., Rio de Janeiro, GB, Brazil, 1974.

high market prices for agricultural products in the world market allowed an increase in Brazilian exports of over \$800 million for that year.

Although Brazil has always had a very large income from agricultural products, it has been a popular tradition to look down on agricultural activities. Coffee, of course, continues to be "king" of the agricultural crops, accounting for approximately 21% of the exports of Brazil. The second highest money earner is soybeans, with a crop in 1973 that sold for well over \$900 million on the world market. The third important cash crop is sugarcane, which has been planted in this nation since the colonial days. Exports of sugar have doubled in the years 1972 and 1973, due to the world shortage. Table 5 provides briefly some information on the major agricultural crops.

Table 5
SELECTED AGRICULTURAL PRODUCTS, BRAZIL, 1974
(million metric tons)

| <u>Commodity</u> | <u>Agricultural Production</u> | | | | | |
|------------------|--------------------------------|-------------|-------------|-------------|-------------|--------------|
| | <u>1966</u> | <u>1967</u> | <u>1968</u> | <u>1969</u> | <u>1970</u> | <u>1973*</u> |
| Coffee | 2.40 | 3.01 | 2.11 | 2.56 | 1.51 | 2.35 |
| Sugarcane | 75.78 | 77.08 | 76.61 | 75.24 | 91.12 | 99.70 |
| Cotton | 1.86 | 1.69 | 1.99 | 2.11 | 2.16 | 3.00 |
| Cocoa | .170 | .194 | .149 | .211 | .197 | .225 |
| Corn | 11.37 | 12.82 | 12.81 | 12.69 | 15.37 | 17.00 |
| Beans | 2.15 | 2.54 | 2.42 | 2.19 | 2.30 | 2.50 |

* Estimated.

Source: Ruth Karen, Brasil de Hoy, Fundação Getulio Vargas, Rio de Janeiro, GB, Brazil, 1974, p. 63.

The poultry industry benefited from the rising cost of beef. In 1973, the poultry industry in Brazil registered a 36% gain for a total of some 285 million birds produced. Due to the increase in beef prices, both the cattle and sheep farms are also trying to increase production. Figures for 1970 indicate the existence of some 94 million head of cattle, 65 million hogs, some 24 million sheep, and about 14 million goats.^{1/}

^{1/} Flavio Cavalcanti, Brasil em Dados, O Banco de Dados, Rio de Janeiro, GB, Brazil, 1971, p. 68.

The development of Brazil has created a change in the traditional agricultural activities. Today food processing is a big industry in the country, especially now that Brazil is the world's largest producer of both sugar and concentrated orange juice. The frozen and chilled meat industry is growing in leaps and bounds, while the fish and seafood industry also is developing well. Because of all this demand for raw foodstuff, the traditional agriculture is changing rapidly as more mechanization is used by the productive farmers.

Industrial Summary

In the past 10 years, the Brazilian economy has undergone great growth. The gross national product has increased on the order of 110% and stood at about \$80 billion at the end of 1974. Much of this growth is credited to the industrial development of the nation. It is estimated that industrial products increased some 86% in the period 1969-1974, and exports in the same period saw a growth of some 230%. The automotive industry, which is concentrated around São Paulo, produced over 850,000 units in 1974; the steel industry, which is found in the states of São Paulo, Minas Gerais, and Rio de Janeiro, produced some 7.5 million tons that same year. Fifty-two ships were built by the shipyards in the state of Rio de Janeiro in 1974, while the cement industry throughout the nation manufactured 15 million tons of cement. Iron ore extraction in the state of Minas Gerais reached nearly 50 million tons, and the state of Amazonas produced over 900,000 tons of manganese ore. One other very important industrial development factor is the production of energy. At the end of 1974, Brazil had installed capacity to produce 15,600 megawatts.

In 1975, the 1,000 largest industries of Brazil (ranked by sales volume) were listed on the basis of their 1974 fiscal reports. The top 15 appear in Table 6.

Only after the ending of World War II did the Brazilian industries reach a consistent growth pattern, being led by the more dynamic activities such as the chemical and metallurgical industries and, thus, starting the industrial development of the nation. Due to special incentives for the importation of capital equipment, the period 1947-1952 was marked by heavy investments in capital equipment (about 9% to 10% of the total for imports at first, growing

Table 6

FIFTEEN LARGEST MANUFACTURING INDUSTRIES IN BRAZIL, 1974

| <u>Name of Company</u> | <u>Rank</u> | <u>Sales</u> (Cr. 1,000) | <u>Assets (liq.)</u> (Cr. 1,000) | <u>Profit</u> (Cr. 1,000) | <u>No. of</u> <u>Employees</u> | <u>Profit per</u> <u>Employee</u> |
|--|-------------|-----------------------------|-------------------------------------|------------------------------|-----------------------------------|--------------------------------------|
| Petroleo Brasileiro | 1 | 27,896,088 | 18,807,360 | 4,603,075 | 37,379 | 123.14 |
| Shell Brasil | 2 | 8,074,630 | 963,862 | 178,943 | 2,358 | 75.88 |
| Volkswagen do Brasil | 3 | 7,908,007 | 2,125,380 | 1,480,635 | 38,979 | 6.94 |
| Esso. Bras. de Petroleo | 4 | 6,379,748 | 561,495 | 154,622 | 1,453 | 106.41 |
| Ford Brasil | 5 | 4,407,342 | 1,011,591 | 124,323 | 20,400 | 6.09 |
| Gen. Motors do Brasil | 6 | 4,215,436 | 951,196 | (76,960) | 20,732 | (3.67) |
| Cia. Atlantica de Pet. do Noreste do Brasil | 7 | 3,906,180 | 433,826 | 130,371 | 1,404 | 98.85 |
| Sanibra Soc. Algodoreira | 8 | 3,885,974 | 486,188 | 131,152 | 6,636 | 19.76 |
| Coop. Central Azucarera | 9 | 3,884,834 | 1,124,194 | N. A. | 2,339 | N. A. |
| Texaco Brasil | 10 | 3,805,582 | 437,674 | 187,032 | 1,319 | 141.79 |
| Mercedes-Benz Brasil | 11 | 3,711,681 | 1,591,322 | 404,925 | 13,334 | 30.36 |
| Cia. Siderurgica Nac. | 12 | 3,475,058 | 3,034,891 | 478,120 | 19,167 | 24.94 |
| Pirelli S. A. Brasil | 13 | 2,988,682 | 968,211 | 395,320 | 9,042 | 43.72 |
| Cia. Souza Cruz | 14 | 2,631,345 | 1,897,320 | 694,091 | 15,528 | 44.69 |
| Cia. Siderurgica | 15 | 2,333,478 | 2,339,261 | 172,591 | 9,692 | 17.80 |

N. A. = Not available.

Source: Grupo Visão, Dirigente Industrial, Vol. XVI, No. 9, Visão S. A. Editorial, São Paulo, Brazil, October 1975, p. 113.

to over 14% by the end of 1952). In 1947, industrial production accounted for 21% of the gross national product,^{1/} and by 1952 it had risen to 24%.

After 1953, the government entered a phase of assistance to the development of industries through deliberate stimulation of the sector. The Plano de Metas, originally created during the Kubitschek administration, was being implemented by 1961 with good results. The industrial sector was able to sustain a 10% annual increase. The traditional industrial activities (textiles, food products, beverages, tobacco) fell behind, while the new and more dynamic industries took the leadership. Import substitution was the key word, and by the end of 1961, the industrial sector was moving at a great pace. For the next five years, the process was halted due to internal problems, but once the new government settled the political situation, the industrial growth again started. The 1968-1970 period showed renewed development of the sector, with growth figures running 13.2% in 1968 and 10.8% in 1969.

To this point, the discussion has centered on the overall industrial growth of Brazil, but a look at industrial activity in terms of relative company size also is revealing. In Brazil, as in other nations of the world, the small and medium-scale industries are by far more numerous and generate far more employment and value added by manufacture than the large industries. In 1969, government figures show that the small-medium industry classification comprised 98% of all industrial establishments in Brazil, employed 63% of all persons in industry, and generated 56% of the value added by manufacture.^{2/} Small-scale industries alone contributed 30% of total industrial employment and 23% of value added. Breakdowns by various industrial sectors are presented in Tables 7 and 8, which show the relative importance of small, medium, and large industries in each sector. Table 7 gives the percentage distribution of total value added, and Table 8 shows the percentage breakdown for employment. In addition, the contributions (in percentage) of small-scale industries to the total value added by manufacture of each industrial sector is tabulated in Table 9 for the five regions of Brazil.

^{1/} Luiz Felipe da S. Wiedemann, Brasil Realidade e Desenvolvimento, Sugestões Literárias S. A., São Paulo, Brazil, 1973, p. 215.

^{2/} Presidência da República, Produção Industrial, 1969, Instituto Brasileiro de Geografia e Estatística, Brasília, Brazil, 1972.

Table 7
 PERCENTAGE OF TOTAL VALUE ADDED BY MANUFACTURE
 CONTRIBUTED BY SMALL, MEDIUM, AND LARGE INDUSTRIES IN
 VARIOUS INDUSTRIAL SECTORS, BRAZIL, 1969

| <u>Types of Industries</u> | <u>% of Value Added by Manufacture</u> | | |
|--|--|---------------|--------------|
| | <u>Small</u> | <u>Medium</u> | <u>Large</u> |
| Group I - Dominated by Small Industries | | | |
| 1. Wood Processing | 71 | 21 | 8 |
| 2. Furniture | 60 | 29 | 11 |
| 3. Leather | 45 | 42 | 13 |
| 4. Garments and Footwear | 39 | 34 | 27 |
| Group II - Dominated by Medium-Size Industries | | | |
| 5. Various Industries | 35 | 47 | 19 |
| 6. Pharmaceuticals | 10 | 46 | 44 |
| 7. Food | 36 | 45 | 20 |
| 8. Cosmetics | 23 | 43 | 34 |
| 9. Mechanical | 21 | 42 | 37 |
| 10. Graphic Arts | 31 | 36 | 33 |
| Group III - Dominated by Large Industries | | | |
| 11. Transportation | 5 | 21 | 74 |
| 12. Tobacco | 7 | 20 | 73 |
| 13. Rubber Products | 14 | 18 | 68 |
| 14. Electrical Equipment | 12 | 29 | 60 |
| 15. Metallurgical | 16 | 26 | 58 |
| 16. Textiles | 20 | 30 | 50 |
| 17. Paper | 17 | 34 | 48 |
| 18. Chemicals | 21 | 30 | 49 |
| 19. Plastics | 21 | 31 | 48 |
| 20. Beverages | 23 | 34 | 43 |
| 21. Nonmetallic Minerals | 24 | 36 | 40 |
| Total Manufacturing Industries | 23 | 33 | 44 |

Source: Frederico José Robalinho de Barros, Pequenas e Médias Indústrias, Instituto de Planejamento Econômico e Social, Rio de Janeiro, GB, Brazil, 1975, p. 41.

Table 8

DISTRIBUTION OF EMPLOYMENT AMONG SMALL,
MEDIUM, AND LARGE INDUSTRIES IN VARIOUS INDUSTRIAL SECTORS, BRAZIL, 1969

| <u>Types of Industries</u> | <u>Employment & Distribution</u> | | |
|---|--------------------------------------|---------------|--------------|
| | <u>Small</u> | <u>Medium</u> | <u>Large</u> |
| Group I - Dominated by Small Industries | | | |
| 1. Wood Processing | 75 | 19 | 8 |
| 2. Furniture | 71 | 22 | 11 |
| 3. Leather | 53 | 36 | 13 |
| 4. Garments and Footwear | 45 | 36 | 27 |
| 5. Various Industries | 43 | 39 | 19 |
| 6. Nonmetallic Minerals | 42 | 28 | 40 |
| 7. Graphic Arts | 40 | 35 | 25 |
| 8. Beverages | 36 | 29 | 36 |
| Group II - Dominated by Medium-Size Industries | | | |
| 9. Pharmaceuticals | 17 | 45 | 38 |
| 10. Food | 41 | 42 | 17 |
| 11. Cosmetics | 37 | 42 | 22 |
| 12. Mechanical | 28 | 38 | 24 |
| 13. Paper | 25 | 38 | 37 |
| Group III - Dominated by Large Industries | | | |
| 14. Transportation | 8 | 24 | 67 |
| 15. Electrical Equipment | 14 | 30 | 55 |
| 16. Textiles | 14 | 34 | 52 |
| 17. Metallurgical | 21 | 28 | 41 |
| 18. Tobacco | 15 | 39 | 46 |
| 19. Rubber Products | 26 | 34 | 40 |
| 20. Chemicals | 25 | 37 | 38 |
| 21. Plastics | 30 | 33 | 37 |
| Total Manufacturing Industries | 30 | 33 | 37 |

Source: Frederico José Robalinho de Barros, Peguenas e Medias Industrias, Instituto de Planejamento Economico e Social, Rio de Janeiro, GB, Brazil, 1975, p 43.

Table 9
SMALL-SCALE INDUSTRY CONTRIBUTION
TO VALUE ADDED BY MANUFACTURE BY REGIONS, BRAZIL, 1969

| <u>Types of Industries</u> | <u>% Contribution to Total Value Added by Manufacture</u> | | | |
|--------------------------------|---|--------------|------------------------|-------------------------------|
| | <u>Southeast</u> | <u>South</u> | <u>North- east</u> | <u>North and Mid-West</u> |
| 1. Wood Processing | 14.5 | 51.0 | 1.9 | 3.1 |
| 2. Furniture | 44.8 | 10.9 | 3.4 | 9.6 |
| 3. Leather | 19.6 | 19.8 | 3.8 | 1.8 |
| 4. Garments and Footwear | 26.5 | 10.6 | 1.6 | 0.3 |
| 5. Various Industries | 28.8 | 5.0 | 0.5 | 0.7 |
| 6. Pharmaceuticals | 8.5 | 0.9 | 0.6 | 0.1 |
| 7. Food | 19.1 | 9.9 | 4.3 | 2.7 |
| 8. Cosmetics | 16.9 | 2.2 | 3.1 | 0.8 |
| 9. Mechanical | 17.5 | 3.1 | 0.4 | 0.02 |
| 10. Graphic Arts | 23.6 | 3.7 | 2.3 | 0.8 |
| 11. Transportation | 4.0 | 0.8 | 0.2 | 0.04 |
| 12. Tobacco | 0.4 | 3.6 | 2.5 | 0.5 |
| 13. Rubber Products | 8.5 | 1.4 | 0.7 | 3.5 |
| 14. Electrical | 10.7 | 1.1 | 0.2 | 0.04 |
| 15. Metallurgical | 13.1 | 2.0 | 0.6 | 0.2 |
| 16. Textiles | 13.0 | 3.1 | 3.6 | 0.3 |
| 17. Paper | 12.6 | 3.3 | 0.9 | 0.2 |
| 18. Chemicals | 14.9 | 3.7 | 2.1 | 0.3 |
| 19. Plastics | 17.0 | 2.8 | 1.1 | 0.6 |
| 20. Beverages | 14.5 | 5.0 | 2.6 | 2.9 |
| 21. Nonmetallic Minerals | 16.9 | 3.0 | 2.7 | 1.4 |
| Total Manufacturing Industries | 15.0 | 5.3 | 1.9 | 0.8 |

Source: Composite information from Instituto Brasileiro de Geografia e Estatística, Produção Industrial 1969, Brasília, Brazil, 1972.

Unfortunately, the author was not able to obtain reliable data on the actual numbers of persons employed in the small and medium-size industries in Brazil. Employment statistics are collected in a manner that does not permit such a breakdown. However, information on value added by manufacture is carefully segregated into the three categories of small, medium, and large industries.

In Brazil, small industries generally are defined as those with less than 100 employees; however, the author encountered two major refinements of this definition. The first was issued by the Banco Nacional do Desenvolvimento Econômico (BNDE) in its document titled Modalidades Operacionais, published in 1970, expanding the definition made by the executive group of the program for Financiamento à Pequena e Média Empresa (FIPEME) in 1966. These definitions limited the investment of small-scale industries to 30 million cruzeiros.

The second major definition came from the Superintendencia do Desenvolvimento da Região Nordeste (SUDENE), which characterizes a small industry as having employment between five and 100 and capital investment up to 10,000 times the national minimum wage figure (Document 170 of August 4, 1967, Ministry of Interior).

Minerals continue to be a very important factor in the economy of Brazil and a great generator of employment. Although the mineral industry cannot be considered small or medium scale, it has such importance that it needs to be briefly reviewed here. Nearly 25% of the world's known iron ore deposits are located in Brazil, and by the end of 1975 the iron-ore exports will probably be as high as \$500 million. The government has been trying to expand this activity, and many natural resources are being developed with the assistance of foreign enterprises.

In 1972, the mineral sector employed 41,000 persons and produced materials sold for over 1,666 million cruzeiros. The leaders in the field were iron ore, coal, manganese, limestone, and gold. Table 1C shows national production of several minerals, employment figures, and comparative data on the area of Santa Catarina.

Trade Summary

The internal and external commerce of Brazil has been the subject of many publications and reports by many learned economists from Brazil and other

Table 10
SELECTED MINERAL PRODUCTION AND EMPLOYMENT DATA FOR BRAZIL AND SANTA CATARINA, 1972

| <u>Product</u> | <u>Production (1,000 tons)</u> | | <u>Value (Cr 1,000)</u> | | <u>Employment</u> | |
|-----------------------------|--------------------------------|-----------------------|-------------------------|-----------------------|-------------------|-----------------------|
| | <u>Brazil</u> | <u>Santa Catarina</u> | <u>Brazil</u> | <u>Santa Catarina</u> | <u>Brazil</u> | <u>Santa Catarina</u> |
| Mineral Water ^{1/} | 180,609 | 4,712 | 48,578 | 1,420 | 2,426 | 100 |
| Sand | 2,169 | 3.7 | 24,133 | 6.8 | 492 | 5 |
| Limestone | 19,518 | 286 | 148,962 | 1,692 | 4,341 | 109 |
| Coal | 5,875 | 4,545 | 192,420 | 144,145 | 9,035 | 6,090 |
| Kaolin | 542 | 15 | 30,135 | 417 | 1,299 | 14 |
| Diatomite | 0.893 | .545 | 208 | 206 | 25 | 19 |
| Feldspar | 67 | .163 | 4,800 | 13 | 226 | 11 |
| Fluorite | 70 | 70 | 12,822 | 12,822 | 350 | 350 |
| Marble | 45 | .9 | 13,464 | 111 | 856 | 14 |
| Quartz | 21 | .6 | 787 | 52 | 57 | 5 |

^{1/} In 1,000 liters.

Source: Ministerio das Minas e Energia, Anuario Mineral Brasileiro 1973, Departamento Nacional da Produção Mineral, Rio de Janeiro, GB, Brazil, 1973, pp. 15-23.

nations. Therefore, no attempt has been made to cover the topic in this document, and only a few selected pieces of information that may be of interest to the reader are presented below.

Internal Commerce. This type of commercial activity takes place between the so called "micro-regions" of Brazil; that is to say, within cities, between cities and municipalities, and between metropolitan areas and other population centers. The intensity is dependent on such factors as: (1) local population, (2) type of products and productivity of the area, (3) historical and institutional factors, (4) and other factors peculiar to the area. Later in this document, a close look at the internal commerce of the state of Santa Catarina will be undertaken.

Inter-Regional Commerce. As the name implies, this is the commercial activity between the five major regions of Brazil that have been previously identified. The volume of commerce between two regions greatly depends on the availability of "complementary" products that each region has. In other words, an agricultural region will deal heavily with a region that produces manufactured products. The geographical proximity of the regions also tends to influence their commercial relations.

Reliable data on both internal and inter-regional commerce are not available. The only information presently found is that collected by the Getulio Vargas Foundation under the heading of "National Accounts." On the basis of the information available, Table 11 provides some idea of the commercial transaction for 1967 in the different regions. At best, the information is limited and outdated.

The information shown in Table 11 again brings forward the fact that commercial activities are concentrated in the Southeast Region.

International Commerce. Table 12 recapitulates the Brazilian exports for the years 1973 and 1974. In spite of the growth of Brazilian exports, in 1974 a deficit of \$4.7 billion was reported in international trade for the country.

Infrastructure Summary

The past 10 years have witnessed a huge investment by the government of Brazil in infrastructure projects -- highways, railways, power, and communications, to mention just a few.

Table 11
INTERNAL REVENUE GENERATED BY COMMERCIAL ACTIVITIES, BRAZIL, 1967

| <u>Locations</u> | <u>Revenue Generated by Commercial Activities (Cr 1,000)</u> | <u>Percent of Total for Brazil</u> |
|---------------------|--|--|
| <u>North</u> | 249,039 | 3.4 |
| Amazonas | 62,508 | |
| Pará | 186,531 | |
| <u>Northeast</u> | 1,271,574 | 17.2 |
| Maranhão | 96,924 | |
| Piauí | 45,951 | |
| Ceará | 198,883 | |
| Rio Grande do Norte | 70,574 | |
| Paraíba | 78,154 | |
| Pernambuco | 390,652 | |
| Alagoas | 36,007 | |
| Sergipe | 56,309 | |
| Bahia | 298,315 | |
| <u>Southeast</u> | 4,782,100 | 64.5 |
| Minas Gerais | 843,436 | |
| Espírito Santo | 108,925 | |
| Rio de Janeiro | 243,748 | |
| Guanabara | 1,060,948 | |
| São Paulo | 2,525,006 | |
| <u>South</u> | 922,744 | 12.4 |
| Paraná | 246,829 | |
| Santa Catarina | 134,354 | |
| Rio Grande do Sul | 541,560 | |
| <u>Mid-West</u> | 186,615 | 2.5 |
| Mato Grosso | 71,192 | |
| Goiás | 115,422 | |
| Total | 7,412,073 | 100.0 |

Source: Fundação Getulio Vargas.

Table 12
BRAZILIAN EXPORTS
(FOB US\$ million)

| Item | 1968-1972 | | 1973 | | 1974 | |
|--|-----------|---------|---------|---------|---------|---------|
| | Value | Percent | Value | Percent | Value | Percent |
| TOTAL (A + B + C) | 2,765.3 | 100.0 | 6,199.2 | 100.0 | 7,967.7 | 100.0 |
| A. Coffee | 900.8 | 32.6 | 1,344.2 | 21.7 | 1,002.0 | 12.6 |
| Beans | 857.7 | 31.0 | 1,244.3 | 20.1 | 877.4 | 11.0 |
| Instant | 43.1 | 1.6 | 99.9 | 1.6 | 124.6 | 1.6 |
| B. Other Products (1 + 2) | 1,826.0 | 66.0 | 4,693.8 | 75.7 | 6,670.6 | 85.0 |
| 1. Primary Products | 1,152.3 | 41.6 | 2,852.2 | 46.0 | 3,932.3 | 49.4 |
| Traditional | 624.8 | 22.5 | 1,241.0 | 20.0 | 2,189.2 | 27.4 |
| Sugar | 180.0 | 6.5 | 522.7 | 8.9 | 1,258.6 | 15.8 |
| raw | 160.8 | 5.8 | 454.9 | 7.3 | 975.6 | 12.2 |
| crystallized | 19.2 | 0.7 | 97.8 | 1.6 | 283.0 | 3.6 |
| Cotton wool | 161.4 | 5.8 | 218.1 | 3.5 | 90.9 | 1.2 |
| Cocoa beans | 70.0 | 2.5 | 88.5 | 1.4 | 210.0 | 2.6 |
| Iron ore | 186.1 | 6.7 | 162.8 | 2.6 | 571.6 | 7.2 |
| Manganese ore | 27.3 | 1.0 | 18.9 | 0.3 | 49.7 | 0.6 |
| Other Primary Products | 527.5 | 19.1 | 1,611.2 | 26.0 | 1,752.1 | 22.0 |
| Maize (grain) | 51.1 | 1.9 | 3.1 | 0 | 138.3 | 1.7 |
| Soy (bean) | 43.0 | 1.6 | 494.2 | 8.0 | 585.0 | 7.4 |
| Rice | 9.5 | 0.3 | 4.2 | 0.1 | 18.1 | 0.2 |
| Brazil nuts | 15.0 | 0.6 | 22.8 | 0.4 | 20.2 | 0.3 |
| Cashew nuts | 5.9 | 0.2 | 9.8 | 0.2 | 15.0 | 0.2 |
| Peanuts (grain) | 8.8 | 0.3 | 19.5 | 0.3 | 28.2 | 0.4 |
| Pepper (grain) | 10.1 | 0.4 | 17.0 | 0.3 | 26.1 | 0.3 |
| Peanuts, cake and bran | 13.0 | 0.5 | 14.5 | 0.2 | 10.2 | 0.1 |
| Cottonseed, cake and bran | 8.8 | 0.3 | 14.5 | 0.2 | 9.2 | 0.1 |
| Soybean, cake and bran | 63.9 | 2.3 | 422.6 | 6.8 | 303.0 | 3.8 |
| Other ores | 15.2 | 0.5 | 17.6 | 0.3 | 20.3 | 0.3 |
| Crude oil | 4.8 | 0.2 | 15.7 | 0.3 | 29.9 | 0.4 |
| Lobster | 11.0 | 0.4 | 18.0 | 0.3 | 27.9 | 0.4 |
| Shrimps | 9.3 | 0.3 | 8.0 | 0.1 | 8.6 | 0.1 |
| Beef, chilled or frozen | 79.8 | 2.9 | 148.5 | 2.4 | 29.5 | 0.4 |
| Horse meat, chilled or frozen | 11.1 | 0.4 | 44.0 | 0.7 | 39.6 | 0.5 |
| Hides, raw | 23.2 | 0.8 | 18.2 | 0.3 | - | - |
| Banana | 9.2 | 0.3 | 14.9 | 0.2 | 22.6 | 0.3 |
| Other fruits | 6.0 | 0.2 | 6.5 | 0.1 | 9.1 | 0.1 |
| Sisal (raw and cordage) | 17.6 | 0.6 | 59.4 | 1.0 | 114.1 | 1.4 |
| Cotton linters | 2.9 | 0.1 | 1.5 | 0 | 1.4 | 0 |
| Tobacco leaves | 32.0 | 1.2 | 58.5 | 0.9 | 99.0 | 1.2 |
| Mate | 4.7 | 0.2 | 3.5 | 0.1 | 7.5 | 0.1 |
| Wool | 17.2 | 0.6 | 45.2 | 0.7 | 43.8 | 0.5 |
| Other | 54.4 | 2.0 | 129.5 | 2.1 | 145.5 | 1.8 |
| 2. Manufactured Goods | 673.7 | 24.4 | 1,841.6 | 29.7 | 2,838.3 | 35.6 |
| Semiprocessed Goods | 237.7 | 8.6 | 476.2 | 7.7 | 631.3 | 7.9 |
| Carnauba wax | 10.0 | 0.4 | 13.3 | 0.2 | 25.2 | 0.3 |
| Sawn wood | 76.9 | 2.8 | 90.0 | 1.4 | 85.8 | 1.0 |
| Fine | 67.9 | 2.5 | 62.8 | 1.0 | 50.1 | 0.6 |
| Other | 9.0 | 0.3 | 27.2 | 0.4 | 35.7 | 0.4 |
| Cocoa butter | 28.4 | 1.0 | 47.6 | 0.8 | 100.0 | 1.3 |
| Peanut oil, raw | 12.0 | 0.4 | 19.5 | 0.3 | 29.1 | 0.4 |
| Castor oil, raw | 42.7 | 1.5 | 127.8 | 2.0 | 128.4 | 1.6 |
| Other | 67.7 | 2.5 | 183.0 | 3.0 | 262.8 | 3.3 |
| Manufactured Goods (excluding instant coffee) | 436.0 | 15.8 | 1,365.4 | 22.0 | 2,207.0 | 27.7 |
| Footwear | 12.9 | 0.7 | 93.5 | 1.5 | 120.3 | 1.5 |
| Boilers, machines and mechanical apparatuses and instruments | 30.4 | 1.1 | 72.2 | 1.2 | 150.0 | 1.9 |
| Beef, processed | 28.6 | 1.0 | 69.8 | 1.1 | 81.0 | 1.0 |
| Wood veneers | 17.0 | 0.6 | 33.4 | 0.5 | 23.1 | 0.3 |
| Electrical machines, apparatuses and other electrical appliances for technical use | 19.8 | 0.7 | 83.8 | 1.3 | 183.0 | 2.3 |
| Office machines | 27.9 | 0.9 | 41.2 | 0.7 | 96.4 | 1.2 |
| Rolling stock and vehicles | 23.9 | 0.9 | 76.2 | 1.2 | 186.4 | 2.3 |
| Other steel-mill products | 29.7 | 1.1 | 52.9 | 0.9 | 72.5 | 0.9 |
| Molasses, edible or inedible | 8.3 | 0.3 | 31.0 | 0.5 | 58.8 | 0.7 |
| Menthol | 14.0 | 0.5 | 28.7 | 0.5 | 46.5 | 0.6 |
| Essential oils | 8.7 | 0.3 | 19.1 | 0.3 | 37.5 | 0.5 |
| Vegetable and fruit juices | 23.7 | 0.9 | 67.6 | 1.1 | 65.3 | 0.8 |
| Cotton fabrics | 10.3 | 0.4 | 52.6 | 0.8 | 59.4 | 0.8 |
| Glass and glassware | 9.1 | 0.3 | 12.0 | 0.2 | 16.7 | 0.2 |
| Petroleum derivatives | 10.9 | 0.4 | 41.0 | 0.7 | 33.2 | 0.4 |
| Other | 158.8 | 5.7 | 590.4 | 9.5 | 976.9 | 12.3 |
| C. Special Transactions ^{1/} | 38.5 | 1.4 | 161.2 | 2.6 | 195.1 | 2.4 |

^{1/} Including ship-chandler's supplies.

Source: Confederação Nacional do Comércio, 10 Anos de Brasil, Cia. Editora Grafica Barbero, Rio de Janeiro, GB, Brazil, September 1975, p. 94.

Highways. According to published information from the Departamento Nacional de Estradas de Rodagem (Highway Department), at the end of 1971, there were over 1.2 million kilometers of roads in Brazil, of which some 78,000 kilometers were paved. This, in part, has been due to the great demand (public) as the nation has developed from one vehicle for every 80 persons in 1957 to the present one vehicle for every 66 persons. Before the 1964 revolution, Brazil had about 12,000 kilometers of paved roads; this has been improved to the present 78,000 kilometers of paved roads. Still, this is not sufficient when one thinks in terms of a nation with 7,400 kilometers of seaboard, 8.5 million square kilometers of area, and some 15,000 kilometers of frontiers. The newest effort, the Trans-Amazon Highway, links the northeast of Brazil to the border with Peru (a distance of 5,400 kilometers, of which about 50% is in the Amazon jungle).

Railway. At the end of 1971, some 31,000 kilometers of railroad track were in service, operated by the Rede Ferroviaria Federal (National Railway Company). Unfortunately, the Brazilian rail system went through some very bad years, with an astronomical deficit in 1969 which forced government to reduce staff and service. Some figures indicate that present-day cargo on rail may run as high as 24.8 billion kilometer tons, which may be true in view of the proposed railway expansion program now under way. By 1979, the government plans to build an additional 3,800 kilometers of track, repair 10,000 kilometers of existing track, and acquire 24,500 freight cars and nearly 300 new diesel locomotives. A very rough calculation would place the program at well over 30 billion cruzeiros of investment.

Merchant Fleet. The Brazilian merchant fleet presently consists of some 560 ships, which represent some three million gross tons. Of the total, about 100 are oceangoing with a capacity of some 2.3 million gross tons. Information available indicates that in 1973 the oceangoing fleet handled some 41% of all exports. All merchant marine service is handled by 12 regular companies regulated by the government. These companies link Brazil with the rest of America, Europe, Africa, and parts of Asia.

Airlines. Due to the size of the country, some areas are best served by airlines, of which several are operating in Brazil nationally as well as internationally. Perhaps the most interesting point about air services is the fact that EMPRAER (Empresa Brasileira Aerea) is now producing several models designed

in Brazil. The latest of these, the "Bandeirante," which is an aircraft with a range of 240 kilometers, has been well accepted and has been used extensively by VASP (Viação Aérea São Paulo) and TransBrasil.

Power. The generation of electricity has shown great increases in the past years. In 1970, the installed capacity was up to over 11 million kilowatts, with average per capita consumption nearly 415 kilowatt-hours.^{1/} Some 40% of the total power generated is consumed by the industrial complex located in the central-south portion of the nation. The government is now investing large sums of monies in purchasing thermonuclear generators to provide for the projected power needs of the future.

Communications. In 1972, the government created Empresa de Telecomunicações Brasileira S. A. (TELEBRAS) and gave it the responsibility of national and international telecommunications. TELEBRAS now operates an effective network of telephone, telex, television (transmission), and microwave communications.

Mail service was operated by the Departamento de Correios e Telegrafo, which in 1969 became the Empresa Brasileira de Correios e Telegrafos (ECT). To date, ECT has over 6,000 offices in Brazil and employs some 75,000 persons. It claims to be in a position to serve 97% of the national territory.

^{1/} Luiz Felipe da S. Wiedemann, Brasil Realidade e Desenvolvimento, Sugetões Literarias S. A., São Paulo, Brazil, 1973, pp. 194-196.

OVERVIEW OF SOUTH SANTA CATARINA

The area referred to as South Santa Catarina, Brazil, encompasses two "micro-regions" which are formed by corresponding municipal associations and which are identified below.

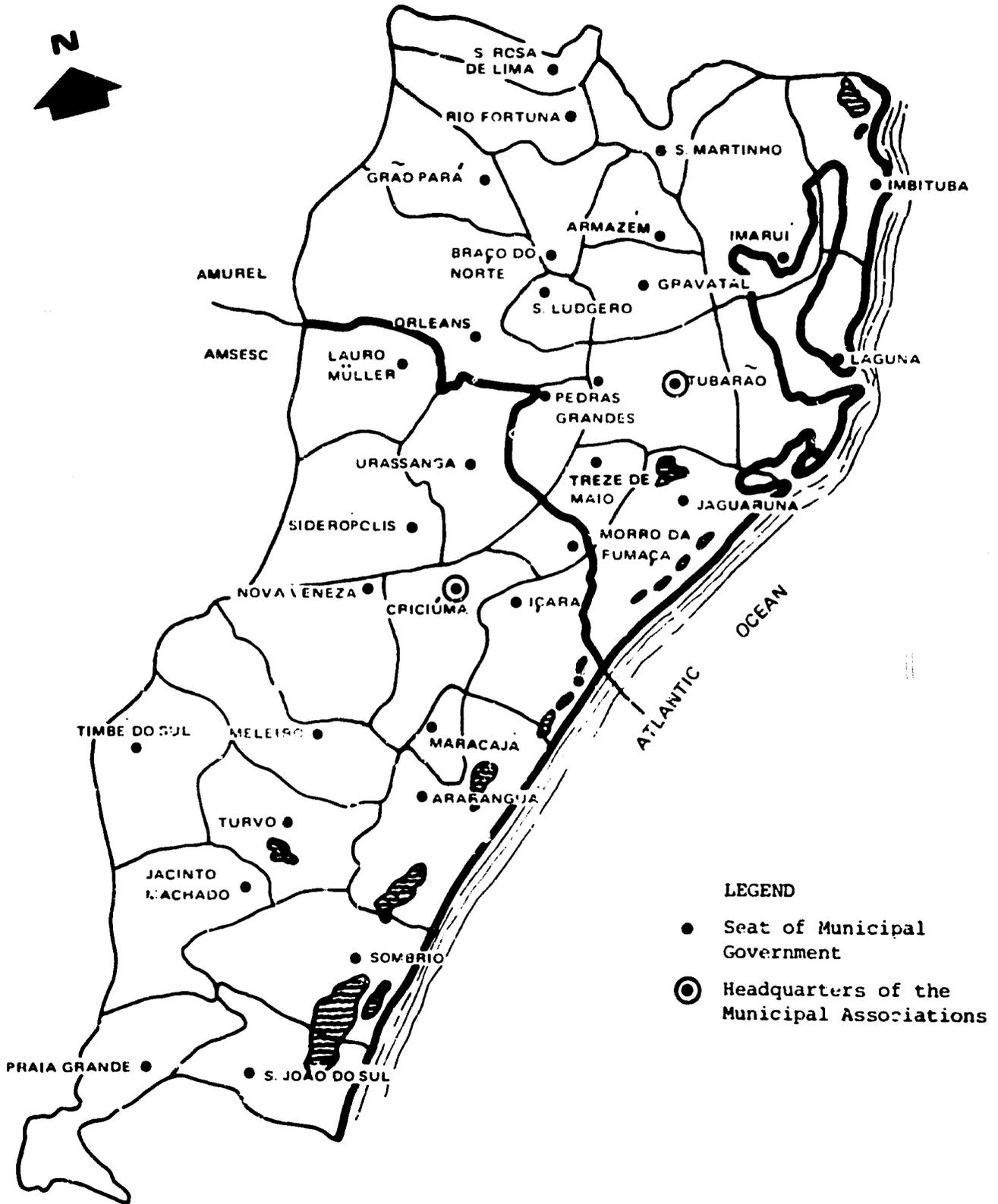
Associação dos Municípios do Sul do Estado de Santa Catarina (AMSESC). This municipal association includes 16 municipalities, as shown by Map 2, which are as follows:

| <u>Name of Municipality</u> | <u>Mayor in 1975</u> |
|-----------------------------|---------------------------|
| Araranguá | Lino Jovelino Costa |
| Criciúma | Argemiro Manique Barreto |
| Içara | José Antonio Dal'Toé |
| Jacinto Machado | Mario Gomes Collares |
| Lauro Müller | Argemiro Raulino Mendes |
| Maracajá | Nivaldo José Rosa |
| Meleiro | Venicio Zanette |
| Morro da Fumaça | Altenor de Bona Sartor |
| Nova Veneza | Alfredo Bortoluzzi |
| Praia Grande | Garibaldino Pereira Pinto |
| São João do Sul | Quintalmo João Pacheco |
| Siderópolis | Plínio Bonassa |
| Sombrio | Arlindo Cunha |
| Timbê do Sul | Liduino Dal-Pont |
| Tur | Romeu Carlessi |
| Urussanga | Altair Goirdani |

Associação dos Municípios da Região de Laguna (AMUREL). This is the second municipal association; it also includes 16 municipalities, as follows:

| <u>Name of Municipality</u> | <u>Mayor in 1975</u> |
|-----------------------------|-------------------------------|
| Armazém | Antônio David Filete |
| Braço do Norte | Lady Fornazza |
| Gravatal | Henio Bartolomeu da Costa Bez |
| Grão Pará | João de Oliveira Souza |
| Imaruí | Portinho Bittencourt |
| Imbituba | Eduardo Elias |
| Jaguaruna | José João Silvano |

Map 2
 MUNICIPAL BOUNDARIES
 SOUTH SANTA CATARINA



LEGEND

- Seat of Municipal Government
- ⊙ Headquarters of the Municipal Associations

| <u>Name of Municipality</u> | <u>Mayor in 1975</u> |
|-----------------------------|--------------------------|
| Laguna | Francisco de A. Soares |
| Orleans | Francisco Zomer |
| Pedras Grandes | Francisco Edemir Zobot |
| Rio Fortuna | Aloysio Willemann |
| São Ludgero | Raulino de Pieri |
| São Martinho | João Lemonje |
| Santa Rosa de Lima | José Francisco Schmidt |
| Treze de Maio | Nilson Simon Nandi |
| Tubarão | Irmoto Jose Feurschuette |

Traditionally, this area has been considered as underdeveloped within the framework of the Federative Republic of Brazil and, because it is somewhat isolated from the rest of the nation, it has been neglected for a large number of years.

Historical Summary

The extreme southern portion of Brazil for all practical purposes was ignored by the early settlers who came from Portugal during the colonial period. The area was then considered nonproductive from an economic point of view, and no noteworthy commercial ventures were initiated.

By the end of the 17th Century, the first settlers came into the region to occupy the vast available territory, mainly for political and military reasons. Most of the original settlers were people from the Azores Islands, which at that time were facing a problem of overpopulation, and they arrived on or about the same time that Spain was exploring the "Plate River" basin. The majority of these original settlements were clustered near the oceanfront. Lagunas was established in 1676 by Dom Brito Peixoto; the settlement was originally named Santo Antônio dos Anjos da Laguna. From this settlement, the exploration of the interior of south Santa Catarina was launched and population centers were established at Tubarão, Campos de Viamão, and even Porto Alegre.

The settlers were faced with two principal problems when they arrived in this area: (1) lack of proper conditions to sustain agricultural development and (2) lack of ability to adapt to the environmental requirements. Both of these problems eroded the physical and moral capabilities of the settlers.

In spite of these shortcomings, the settlers attempted to carry out agro-industrial activities, fishing, and general trade. Their products went to the São Paulo market, as well as to the more southern extremes of the region. Before long, the "caminhos do gado" (ox or cattle trails) were crisscrossing the Serra Geral (General Mountain Range) and entering the plateau area. Meantime, the constant thrust of Spanish groups from the Plate River continued to keep the settlers in turmoil and decimated the male population. Before long, this economic nucleus began to deteriorate, due mostly to the fact that they were isolated; at best, they managed to support themselves, assisted by the few black slaves they possessed.

It may be of interest to note that the early Azorian settlers were responsible for establishing the cities of Laguna, Imaruí, Vila Nova, Pescaria Brava, and Merim. They left behind their architectural style, type of government, and religion, all of which are now integrated into present living conditions.

During the 19th Century, the first groups of European immigrants came to this area. They naturally had a different approach to settlement from the Azorians, but basically there were two major groups: (1) official and (2) spontaneous. The first group was sponsored and assisted by the government, whereas the second group had no support from anyone.

The official settlers were able to establish three population centers: Azambuja, Grão Pará, and Urussanga. Meantime, the German immigrants started the cities of Teresópolis, São Bonifácio, and São Pedro de Alcântara. At the same time, the "spontaneous" settlers established the towns of Vargem do Cedro, Praia Redonda, Armazem, Gravatal, Vale do Capivari, Rio Fortuna, Orleans, Grão Pora, Lauro Müller, and, finally, Criziuma.

Generally speaking, the settlers arriving during the 19th Century were from Italy, Germany, and Poland, although many other European nations were represented in that group. To this date, the influence of the different European groups still may be found in the area of South Santa Catarina.

Toward the end of the last century, the government of Brazil developed an interest in South Santa Catarina because it was the best available source of coal in the nation. Because of this, the government invested the necessary funds to establish ports and railways, and financed mining operations. This government interest assisted the area, but was really an extension of the "colonial" system within a nation.

In summary, the original Azorian settlers initiated the pre-industrial period in which they survived within a soldier-farmer economy. South Santa Catarina later evolved as an ethnic melting pot with two main population centers -- Criciúma and Tubarão. The economic structure was centered around small farmers, due to the nature of the land and the social and historical background.

With this in mind, the reader may have a better grasp of some of the situations that follow in this chapter. Map 3 gives a general summary of the settlement of the area by the different ethnic groups that carried out this function.

Geographical Summary

From a geographical point of view, South Santa Catarina is located between longitude 48°-38' and 50°-10' west and latitude 28°-5' and 29°-20' south of Greenwich. The two micro-regions of AMSESC and AMUREL have a total area of about 9,409 square kilometers, of which AMSESC represents 5,064 square kilometers and AMUREL the balance of 4,345 square kilometers. Both of the micro-regions make up about 9.8% of the total land area of the state of Santa Catarina.

The total land mass comprises three distinct geographical areas: (1) coastal plain, (2) sedimentary formations, and (3) seaboard mountain range. The coastal plains are along the eastern boundary, all the way from Imbituba to the limits of the state of Rio Grande do Sul. At Araranguá, they reach their widest dimension of about 50 to 60 kilometers, right up to the feet of the Serra Geral (General Range). The coastal plains run from sea level to a maximum of 100 meters of altitude. The sedimentary formation covers the western end of the area up to the Serra Geral, and the formation becomes narrower as it moves to the south. The landscape is generally eroded, with some rolling land; this is best noticed around Criciúma, Içara, Sangão, São Rafael, Forquilha, and Cerâmica. There are large penetrations of silt within the land formation of this area. The third geographical classification, the seaboard range, is found in the northern, northeastern, and central land area of South Santa Catarina. This is a low range running on an average of 200 to 300 meters above sea level. The range is mostly granite and forms a complete barrier to the north and northeast. There are a few higher elevations at Santa Rosa de Lima and Rio Fortuna.

According to geological surveys carried out by different government agencies,^{1/} the region has a very complex geological structure with mineral deposits of coal, refractory clays, fluorite, and kaolin. The area is composed of recent sedimentary rocks, basalt, and Precambrian rocks. The latter are considered the oldest formations in the southern portion of the nation. There are also large granite formations, of which over 10 different types have been identified.

The region has five principal river basins: D'Una, Tubarão, Urussanga, Araranguá, and Mampituba. The Tubarão River Basin is the largest of the five, and it is made up of mainly the Braço do Norte River and the Capivari River, both of which join to form the Tubarão River. The region has numerous lakes and lagoons, which, together with the rivers, on occasion have caused dramatic flood conditions in various population centers. The most recent tragedy occurred in March of 1974, when Tubarão was practically wiped out by flooding of the Tubarão River. The large lagoons of Mirim, Imarui, and Santo Antônio, as well as the smaller ones of Garopaba, Jaguaruna, Esteves, Cavera, and Sombrio, play a large socioeconomic role in the life of the population, since for generations the people have fed upon the shrimp and crab produced by these bodies of water.

The weather in South Santa Catarina is considered "mesothermal," with the average temperature during winter running between 19° and 3° centigrade. Summer averages will range between 22° and 27° centigrade. There are three weather stations in the area -- one each at Laguna, Orleans, and Urussanga. The following data were provided by these official weather stations:^{2/}

| <u>Weather Station</u> | <u>Average Maximum</u> | <u>Average Minimum</u> |
|------------------------|------------------------|------------------------|
| Laguna | 23.1°C 43 years | 16.6°C 45 years |
| Orleans | 27.0°C 22 years | 12.5°C 23 years |
| Urussanga | 25.9°C 43 years | 13.6°C 42 years |

There is no dry season in this area of Brazil, and the weather stations have recorded the following precipitation data:

^{1/} SUDESUL, Secretaria de Agricultura S. C. e U.F.S.M., Levantamento Semi-detalhado dos Solos das Regiões de Laguna e Sul do Estado de Santa Catarina, SUDESUL, Florianópolis, S. C., Brazil, 1973.

^{2/} Personal interviews with the individuals in charge of the three stations.

| | | |
|-----------|------------|-----------------|
| Laguna | 1,332.4 mm | 49-year average |
| Orleans | 1,350.3 mm | 23-year average |
| Urussanga | 1,449.1 mm | 47-year average |

Different soil studies have been conducted over the years, but in 1973 a very comprehensive study was carried out by the Federal University of Santa Maria, Superintendência do Desenvolvimento da Região Sul (SUDESUL), and the Secretary of Agriculture of the State of Santa Catarina. The final report^{1/} classified 17 main soil groups throughout South Santa Catarina, which are briefly described as follows:

1. Sanga de Areia. Principally found in the municipalities of Jacinto Machado and Praia Grande. Soil is derived from basalt, with rolling land turning to hills. Limited agricultural use; presently planted mostly in bananas and vegetables.

2. Cachoeira. Mainly found in the municipalities of Praia Grande and on the border of the state of Rio Grande do Sul. Clay formations with basalt; land rolling with short declines. High acid content, tendency to erode, may be farmed with mechanical equipment. Presently planted mostly in manioc, tobacco, and corn.

3. Tubarão. This type of soil is found in the municipalities of Tubarão, Pedras Grandes, São Ludgero, Braço do Norte, and Grão Para. It is very frequently found close to existing rivers, and is formed largely from fluvial sedimentation carried by these bodies of water. Land is normally flat and quite fertile. At present planted mostly in beans, corn, tobacco, and vegetables.

4. Jacinto Machado. Identified in the municipalities of Jacinto Machado, Turvo, Praia Grande, São João do Sul, Forquilha, and Nova Veneza. This soil is basically derived from alluvial material and basalt. Mostly flat land turning to rolling, with light acid content. Mainly used for planting tobacco, corn, and beans.

5. Araranguá. This type of soil is found close to the coast and runs all the way from Imbituba to Laguna and from Maracajá to the border with the state of Rio Grande do Sul. Soil composition mainly quaternary sediment and sea life.

^{1/} SUDESUL, Secretaria de Agricultura S. C. e U.F.S.M.; Levantamento Semidetalhado dos Solos das Regiões de Laguna e Sul do Estado de Santa Catarina, SUDESUL, Florianópolis, Brazil, 1973.

Low-quality soil, very dry with low moisture retention capability, very few nutrients. Planted mainly in manioc and sweet potatoes.

6. Meleiro. Found in the southwest area of the municipalities of Meleiro, Turvo, Maracajá, and others. This soil is also a formation derived from quaternary sedimentation and basalt. Clay-type soil, very acid, low porosity. Planted mostly in rice, but with irrigation.

7. Jundiá. Mainly found in the southern portion of the region around the municipality of Araranguá. Soil composition derived from quaternary sediment and marine life. This type of soil is very difficult to cultivate with mechanical equipment. Mostly planted in rice, but under irrigation.

8. Gravatal. Found along the coast and in the lowlands. Composition mainly recent organic deposit found in swamps. Not used normally for agricultural purposes and when so, it is planted in manioc.

9. Içara. Common to the municipalities of Içara, Criciúma, and Maracajá. Soil has been formed from red clays with some silt. Land usually rolling to rough, holds fairly well against erosion. The land is usually highly cultivated and main crops are tobacco, manioc, corn and bananas.

10. Lauro Müller. This type of soil is common to the municipalities of Lauro Müller and Siderópolis. The soil is mainly a clay type with high acidity. The land is rolling or hilly. Not applicable to machine farming and is cultivated with hand tools. The crops are usually not very good and are basically manioc and some corn.

11. Guatá. This type of soil occurs usually adjacent to the Serra Geral (General Range). It is mainly derived from basalt and the land is very rough or hilly. Usually not cultivated at all.

12. Cocal. Primarily found in the municipalities of Urussanga and Cocal. Sandy type of soil, and the land tends to be rolling. This is usually not cultivated, but sometimes it is planted in eucalyptus.

13. Igrejinha. Mostly encountered in the municipalities of Urussanga and Cocal. The soil has a strong yellow silt base; high acidity is common to this soil. When planted, used for tobacco, corn, or beans.

14. Treviso. Common to the municipalities of Urussanga and Treviso. Mainly a clay soil; contains high acidity and organic material. Usually not farmed and if so, in a very unproductive manner.

15. Orleans. Usually this type of soil is found in the municipalities of Orleans and Lauro Müller. The soil has been formed from igneous rock, which is classified as a type of granite. The land tends to be hilly and the soil is very acid. Usually planted in tobacco, manioc, and corn.

16. Morro da Fumaça. This type of soil may be found throughout the whole area of South Santa Catarina. The soil was derived from granite rocks and mixed with clays. Very susceptible to erosion and used for planting tobacco, onion, and manioc.

17. Morro Chato. Common to the four municipalities of Turuo, Maracajá, Nova Veneza, and Timbê. Mainly clay-base soil with some basalt. This soil is highly acid and drains well. When cultivated, it is usually planted in corn, manioc, or beans.

Population Summary

Historically, the area known as South Santa Catarina has not had an alarming population growth, particularly when compared with the national population growth average. In 1950, South Santa Catarina had a total population of about 315,214,^{1/} which, when distributed over the land area of 9,409 square kilometers, gives a demographic density of 33.5 persons per square kilometer. The area of AMSESC had a population of 146,632, with a demographic density of 29 persons per square kilometer, while AMUREL, with 168,582 inhabitants, had 38 persons per square kilometer.

Table 13 provides the population data for the years 1950, 1960, and 1970, showing the relatively slow demographic growth that the area has had.

It can be seen from Table 13 that AMSESC experienced rapid growth in the period 1950-1960, but this trend did not continue. Overall, the area of South Catarina, with a population of 496,785 in 1970, had a demographic density of 52.8 persons per square kilometer, whereas the state of Santa Catarina, with 2,901,734 inhabitants, had a much lower density of 30.2 persons per square kilometer. The population of South Santa Catarina is about 17.12% of the total state population.

^{1/} Fundação Instituto Brasileiro de Geografia e Estatística, Censo Demográfico de Santa Catarina, 1950, Florianópolis, Brazil, 1952, p. 12.

Table 13
DEMOGRAPHIC EVOLUTION, SOUTH SANTA CATARINA, 1950-1970

| <u>Geographic Area</u> | <u>Population</u> | | | <u>Percent Increase</u> | |
|------------------------|-------------------|-------------|-------------|-------------------------|------------------|
| | <u>1950</u> | <u>1960</u> | <u>1970</u> | <u>1950-1960</u> | <u>1960-1970</u> |
| AMSESC | 146,632 | 205,524 | 263,519 | 40 | 28 |
| AMUREL | 168,582 | 185,550 | 233,266 | 10 | 26 |
| South Santa Catarina | 315,214 | 391,074 | 496,785 | 25 | 27 |
| Santa Catarina | 1,560,502 | 2,146,909 | 2,901,734 | 37 | 35 |

Source: Fundação Instituto Brasileiro de Geographia e Estadística, Censo Demográfico de Santa Catarina, 1950, 1960, 1970, Florianópolis, Brazil, corresponding years.

A breakdown of the population by municipality within the area of South Santa Catarina for 1970 appears as Table 14.

On the basis of the census figures for 1970, Map 4 shows the relative population density of each area of South Santa Catarina. Considering present circumstances and samples taken by the different agencies, it is anticipated that by 1980 South Santa Catarina will have only about 16% of the total state population, with AMSESC having some 337,000 inhabitants and AMUREL some 293,000 persons, while the state as a whole will have about 3,900,000 inhabitants.

Originally, the rural population was far larger than the urban population, but the last two decades have led to a massive growth of the urban population. This has been due mainly to the "rural exodus," a trend which is evident throughout the world. Table 15 clearly shows the change that has taken place over the 20 years from 1950-1970. To further complicate the problem, the urban population also has a tendency to migrate to larger centers. In 1960, AMSESC had five cities in that population bracket. The same is true in AMUREL: in 1960, it had only two cities with populations between 20,001 and 50,000, yet by 1970 it had three such cities.

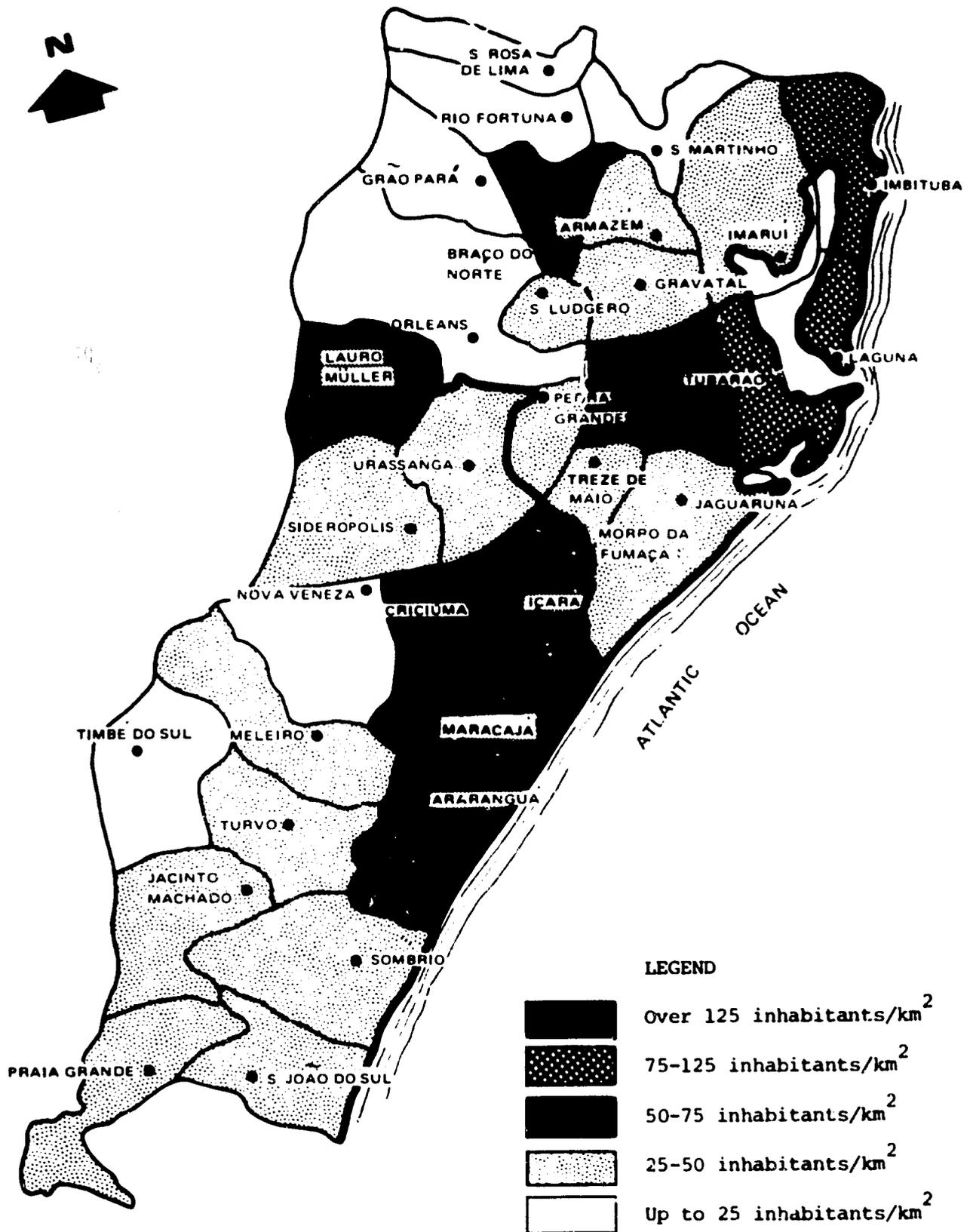
Generally speaking, the population is a young group, with 37% of the total being under 30 years of age. It is interesting to note that the age group 0-4 years in 1970 was smaller than the age group 5-9 years, which leads one to believe that since no high mortality has been reported or other such factors, the younger families are moving out of the area and the birth rate has decreased.

Table 14
SOUTH SANTA CATARINA
POPULATION, LAND AREA, AND DEMOGRAPHIC DENSITY BY MUNICIPALITIES, 1970

| <u>Municipality</u> | <u>Population</u> | <u>Area (km²)</u> | <u>Density² (inhab./km²)</u> |
|----------------------|-------------------|----------------------------------|--|
| <u>AMSESC</u> | 263,519 | 5,064 | 52.0 |
| Araranquã | 26,211 | 412 | 63.6 |
| Criciúma | 81,452 | 274 | 297.3 |
| Içara | 17,098 | 299 | 57.2 |
| Jacinto Machado | 13,689 | 368 | 37.0 |
| Lauro Müller | 15,574 | 287 | 54.3 |
| Maracajá | 4,079 | 60 | 68.0 |
| Meleiro | 11,306 | 402 | 28.0 |
| Morro da Fumaça | 4,758 | 84 | 56.6 |
| Nova Veneza | 8,135 | 454 | 18.0 |
| Praia Grande | 8,140 | 295 | 27.6 |
| São João do Sul | 8,577 | 283 | 30.3 |
| Siderópolis | 13,341 | 405 | 33.0 |
| Sombrio | 18,049 | 431 | 41.9 |
| Timbê do Sul | 6,300 | 336 | 18.8 |
| Turvo | 11,159 | 348 | 32.0 |
| Urussanga | 15,651 | 325 | 48.0 |
| <u>AMUREL</u> | 233,266 | 4,345 | 53.8 |
| Arinazém | 7,117 | 147 | 48.4 |
| Braço do Norte | 10,540 | 184 | 57.3 |
| Grão Pará | 7,025 | 298 | 23.6 |
| Gravatal | 8,438 | 229 | 36.8 |
| Imaruí | 21,041 | 422 | 49.9 |
| Imbituba | 20,498 | 182 | 112.6 |
| Jaquaruna | 14,397 | 410 | 35.0 |
| Laguna | 35,042 | 353 | 99.0 |
| Orleans | 15,773 | 689 | 22.9 |
| Pedras Grandes | 5,912 | 163 | 36.3 |
| Rio Fortuna | 4,441 | 279 | 15.9 |
| Santa Rosa de Lima | 1,773 | 154 | 11.5 |
| São Ludgero | 4,597 | 112 | 41.0 |
| São Martinho | 3,470 | 227 | 15.3 |
| Treze de Maio | 6,326 | 143 | 44.2 |
| Tubarão | 66,876 | 353 | 189.5 |
| South Santa Catarina | 496,785 | 9,409 | 52.9 |
| Santa Catarina | 1,901,734 | 95,989 | 30.2 |

Source: Fundação Instituto Brasileiro de Geografia e Estatística, Censo Demográfico de Santa Catarina, 1970, Florianópolis, Brazil, 1973.

Map 4
 SOUTH SANTA CATARINA
 DEMOGRAPHIC DENSITY, 1970



Source: Fundação Instituto Brasileiro de Geografia e Estatística, Censo Demográfico de Santa Catarina, 1970, Florianópolis, Brazil, 1973.

Table 15
SOUTH SANTA CATARINA, RURAL AND URBAN POPULATION, 1950-1970

| <u>Geographic Area</u> | <u>Urban Population</u> | | | | | | <u>Increase of Urban Population (%)</u> | |
|------------------------|-------------------------|----------------|-----------------|----------------|-----------------|----------------|---|------------------|
| | <u>1950</u> | | <u>1960</u> | | <u>1970</u> | | <u>1950-1960</u> | <u>1960-1970</u> |
| | <u>Absolute</u> | <u>Percent</u> | <u>Absolute</u> | <u>Percent</u> | <u>Absolute</u> | <u>Percent</u> | | |
| AMSESC | 22,633 | 15.0 | 54,577 | 27.0 | 103,227 | 39.0 | 141.0 | 89.0 |
| AMUREL | 35,461 | 21.0 | 68,306 | 37.0 | 101,654 | 44.0 | 92.0 | 49.0 |
| South Santa Catarina | 58,094 | 18.0 | 122,883 | 31.0 | 204,881 | 41.0 | 112.0 | 67.0 |
| Santa Catarina | 362,717 | 23.0 | 688,358 | 32.0 | 1,246,043 | 43.0 | 90.0 | 81.0 |

Source: Fundação Instituto Brasileiro de Geografia e Estadística, Censo Demográfico de Santa Catarina, 1950, 1960, 1970, Florianópolis, Brazil, corresponding years.

In AMSESC 50.3% of the population is male and 49.7% is female, while in AMUREL the female population is higher (50.3%) and the male population is lower (49.7%). For South Santa Catarina as a whole, it is evenly balanced, with 50% in each category.

Perhaps the most interesting detail is employment. In 1970, it is reported that only 26.0% of the AMSESC population and 26.7% of the AMUREL population was economically active. Comparable figures for South Santa Catarina and the entire state were 26.3% and 30.4%, respectively. In very general terms, it may be said that two thirds of the population was not economically active at that time. Table 16 provides detailed data on the economically active population.

Although the census of population for 1970 does not specifically show unemployment figures, it is estimated that AMUREL had some 27,000 persons unemployed, or about 18% of the potentially economically active population. The figures are higher for AMSESC, with an estimated 33,000 unemployed, or about 20% of the economically active population.^{1/}

In summary, the population of South Santa Catarina is experiencing a slow growth which probably results from outmigration. The cities, on the other hand, are experiencing rapid growth, due to rural-urban migration. Furthermore, there is a very high unemployment rate throughout the area.

Social Summary

One of the main problems facing Santa Catarina is lack of education, but this problem is far more acute in South Santa Catarina. In 1970, 31.4% of the population of South Santa Catarina over 10 years of age had completed some type of educational training program. Only 26.3% of the South Santa Catarina population had completed grammar school, compared with 31.7% of the population of the state of Santa Catarina. The educational system is somewhat different from that of the U.S.A., as shown in Table 17.

Under this type of system, the student remains at Grade 3 from four to six years, depending on his chosen profession. Six years are required for a physician, five for an engineer, four for an economist or a lawyer. On the basis of the above definitions, Table 18 gives comparative data on the educational

^{1/} Field data gathered by the FESSC research team.

Table 16
 ECONOMICALLY ACTIVE POPULATION
 SOUTH SANTA CATARINA, 1970
 (in percent)

| Economically Active Population by Activity Sector | Geographic Area | | | |
|---|-----------------|--------|-------------------------|-------------------|
| | AMSESC | AMUREL | South Santa Catarina | Santa Catarina |
| Agriculture and Related Activities | 12.97 | 13.94 | 13.41 | 15.56 |
| Commercial Activities | 1.54 | 1.60 | 1.60 | 1.67 |
| Industrial Activities | 5.72 | 3.52 | 4.68 | 5.99 |
| Loan Services | 1.90 | 2.19 | 2.03 | 2.55 |
| Non-Economically Active Population | 74.0 | 73.3 | 73.7 | 69.6 |
| Public Administration | 0.47 | 0.56 | 0.53 | 0.85 |
| Others | 1.17 | 1.74 | 1.45 | 1.14 |
| Total Economically Active Population | 26.0 | 26.7 | 26.3 | 30.4 |

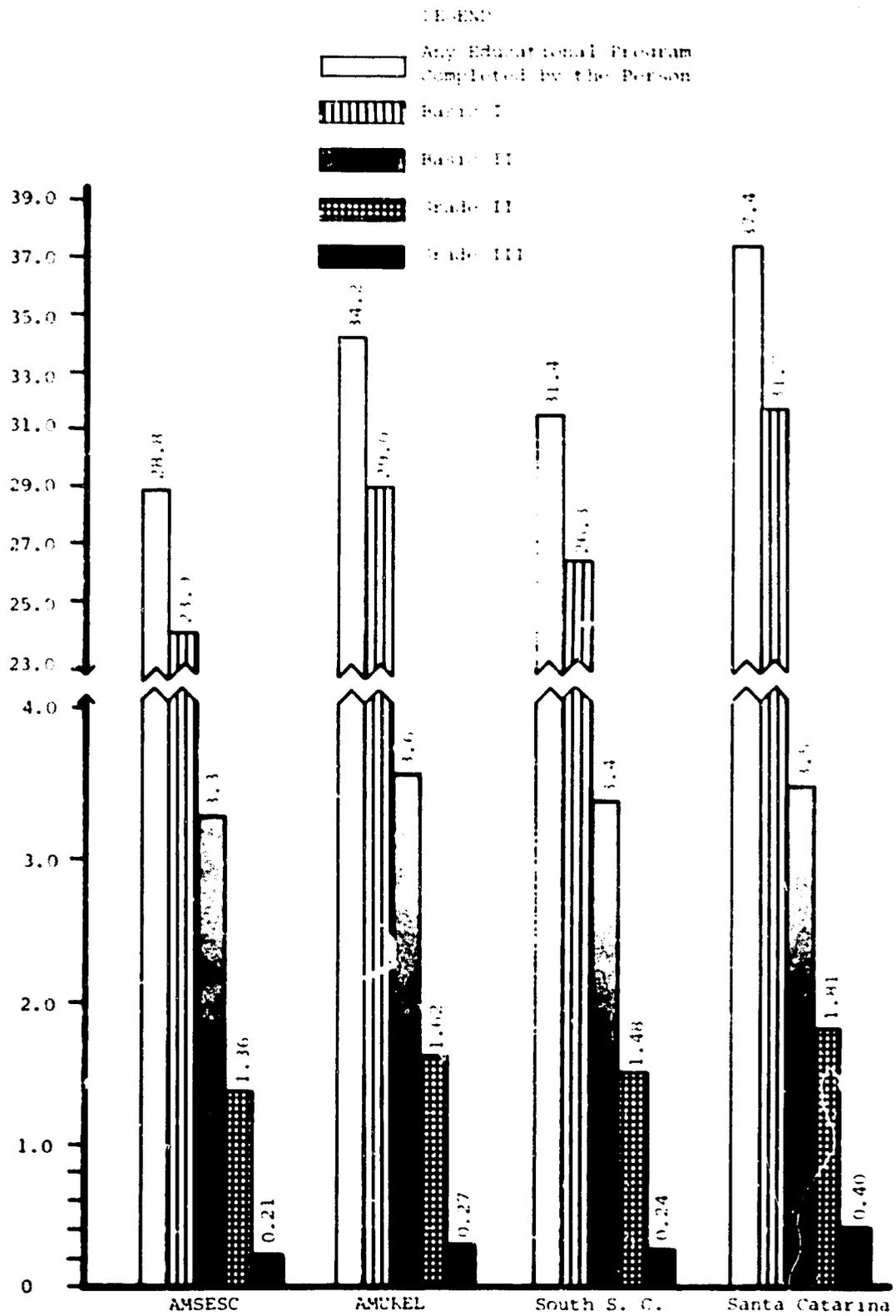
Source: Fundação Instituto Brasileiro de Geografia e Estatística, Censo Demográfico de Santa Catarina, 1970, Florianópolis, Brazil, 1973.

Table 17
 EDUCATIONAL SYSTEM, BRAZIL, 1974

| <u>Official Name</u> | | |
|----------------------|---|---|
| Grade I | Basic I - 4 years Basic II - 4 years | Elementary - Primary Partial High School |
| Grade II | Base Core - 1 to 2 years Professional Orientation - 2 years | High School - Technicians Instructors - Scientific Staff |
| Grade III | Higher Education | College Graduates - Professors Post-Graduates - Ph.D's |

Source: Fundação Educacional do Sul de Santa Catarina (FESSC).

Table 18
 EDUCATIONAL PROGRAMS COMPLETED BY ALL POPULATION OVER 10 YEARS OF AGE,
 SOUTH SANTA CATARINA, 1970



Source: Fundação Educacional do Cui de Santa Catarina (FESSC) Survey.

programs completed in 1970 by all population over 10 years of age for AMSESC, AMUREL, South Santa Catarina, and the state.

With the education reform of 1970, as a result of Law 5692, nearly all of the municipalities of AMSESC and AMUREL established programs to provide the new Basic I and II, with six municipalities in AMSESC and 11 in AMUREL also providing for educational programs in Grade II. As a result, school enrollment has increased some 121% in Grade I and some 321% in Grade II. The two tables that follow (Tables 19 and 20) list the comparative enrollment figures for 1968 and 1970 in both mini-regions by municipalities. The increase in enrollment at the indicated levels also has generated a pressure at the Grade III or college level, most of which is being absorbed by the only two institutions available in the area -- Fundação Educacional do Sul de Santa Catarina (FESSC) and Fundação Educacional de Criciúma (FUCRI).

With the new educational program of 1970, these two institutions, FESSC and FUCRI, were not only called upon for educational programs of Grade II level, but also were the only ones capable of providing Grade III programs. Other schools were participating in Grade II programs to generate mid-level technicians, as shown by Table 21, but the college education was limited to FESSC and FUCRI, as shown by Table 22. Figure 1 shows the percentage distribution of the student registration in all three grades by municipalities either in AMUREL or AMSESC.

An important benefit of the educational reform is the fact that for the first time a Brazilian student has the option of completing a level comparable to high school (Grade II) and graduating as a technician or continuing to college level (Grade III). Prior to 1970, the high school graduate was not educated to enter a professional level of employment.

This influx of students generated by the educational reform and the availability of schools has put a great load on the existing educators and, as far as can be envisioned, it will get progressively worse unless additional manpower and resources are allocated. There is also a need to upgrade the existing academic manpower to meet present demand.

The existing situation makes it very difficult for the educational system to also take on technological development and research. Only if major changes are implemented, resources allocated, and manpower developed can the present situation be improved. This is what FESSC is attempting to carry out.

Table 19

EVOLUTION OF ENROLLMENT IN GRADE I BY MUNICIPALITIES, SOUTH SANTA CATARINA, 1968-1974

| Geographic Area | Basic I | | Basic II | | Grade I | | Variance, 1968-1974 (Index 1968 = 100) | | |
|----------------------|---------|--------|----------|--------|---------|---------|---|----------|---------|
| | 1968 | 1974 | 1968 | 1974 | 1968 | 1974 | Basic I | Basic II | Grade I |
| AMSESC | 40,922 | 41,915 | 7,715 | 20,321 | 48,637 | 62,236 | 102 | 263 | 128 |
| Araranguá | 3,866 | 4,247 | 871 | 2,009 | 4,737 | 6,256 | 110 | 231 | 132 |
| Criciúma | 11,947 | 13,110 | 3,108 | 9,145 | 15,055 | 22,255 | 110 | 294 | 148 |
| Içara | 2,827 | 2,846 | 218 | 1,127 | 3,045 | 3,973 | 101 | 517 | 130 |
| Jacinto Machado | 1,617 | 2,090 | 73 | 410 | 1,690 | 2,500 | 129 | 562 | 148 |
| Lauro Müller | 2,978 | 2,424 | 387 | 1,044 | 3,365 | 3,468 | 81 | 270 | 103 |
| Maracajá | 721 | 667 | 73 | 351 | 794 | 1,018 | 93 | 481 | 128 |
| Meleiro | 1,567 | 1,806 | 90 | 404 | 1,657 | 2,210 | 115 | 449 | 133 |
| Morro da Fumaça | 662 | 841 | 195 | 332 | 857 | 1,233 | 127 | 201 | 144 |
| Nova Veneza | 1,156 | 1,246 | 190 | 111 | 1,346 | 1,957 | 108 | 374 | 145 |
| Praia Grande | 1,305 | 1,379 | 132 | 334 | 1,437 | 1,763 | 106 | 291 | 123 |
| São João do Sul | 1,698 | 1,605 | 77 | 193 | 1,775 | 1,793 | 96 | 251 | 101 |
| Siderópolis | 2,128 | 1,773 | 1,389 | 1,214 | 3,517 | 2,987 | 83 | 87 | 85 |
| Sombrio | 3,502 | 2,885 | 342 | 749 | 3,844 | 3,634 | 82 | 219 | 95 |
| Timbê do Sul | 806 | 844 | - | 203 | 806 | 1,047 | 105 | - | 130 |
| Turvo | 1,719 | 1,845 | 215 | 661 | 1,934 | 2,506 | 107 | 307 | 130 |
| Urussanga | 2,423 | 2,307 | 355 | 1,324 | 2,778 | 3,631 | 95 | 373 | 131 |
| AMUREL | 39,510 | 34,666 | 7,125 | 17,921 | 46,635 | 52,587 | 88 | 252 | 113 |
| Armazém | 1,171 | 895 | 165 | 446 | 1,336 | 1,341 | 76 | 270 | 109 |
| Braço do Norte | 1,692 | 1,710 | 436 | 1,341 | 2,128 | 3,051 | 101 | 308 | 143 |
| Grac Pará | 880 | 852 | 83 | 236 | 963 | 1,088 | 97 | 284 | 113 |
| Gravatal | 1,525 | 1,320 | 158 | 364 | 1,683 | 1,683 | 87 | 230 | 100 |
| Imarui | 6,399 | 3,877 | 223 | 469 | 6,622 | 4,346 | 61 | 210 | 66 |
| Imbituba | 3,489 | 3,303 | 551 | 1,454 | 4,040 | 4,757 | 95 | 264 | 118 |
| Jaquaruna | 2,289 | 2,156 | 337 | 712 | 2,626 | 2,868 | 94 | 211 | 109 |
| Laguna | 5,404 | 5,250 | 1,265 | 2,270 | 6,669 | 7,520 | 97 | 179 | 113 |
| Orleans | 2,201 | 1,950 | 478 | 936 | 2,679 | 2,886 | 89 | 196 | 108 |
| Pedras Grandes | 939 | 991 | 91 | 275 | 1,030 | 1,266 | 106 | 302 | 123 |
| Rio Fortuna | 660 | 623 | 115 | 309 | 775 | 932 | 94 | 269 | 120 |
| Santa Rosa de Lima | 234 | 283 | - | - | 234 | 283 | 121 | - | 121 |
| São Ludgero | 834 | 912 | 200 | 403 | 1,034 | 1,315 | 109 | 202 | 127 |
| São Martinho | 613 | 354 | 44 | 341 | 657 | 695 | 58 | 775 | 106 |
| Treze de Maio | 892 | 890 | 70 | 106 | 962 | 996 | 100 | 151 | 104 |
| Tubarão | 10,288 | 9,300 | 2,909 | 8,259 | 13,197 | 17,559 | 90 | 284 | 133 |
| South Santa Catarina | 80,432 | 76,581 | 14,840 | 38,242 | 95,272 | 114,823 | 95 | 258 | 121 |

Source: Coordenadoria Regional de Educação do Estado de Santa Catarina, unpublished.

Table 20
EVOLUTION OF ENROLLMENT IN GRADE 1 BY MUNICIPALITIES
SOUTH SANTA CATARINA, 1968-1974

| <u>Geographic Area</u> | <u>Number of Registrations</u> | | <u>Variance, 1968-1974</u> <u>(Index 1968 = 100)</u> |
|------------------------|--------------------------------|-------------|---|
| | <u>1968</u> | <u>1974</u> | |
| <u>AMSESC</u> | 1,308 | 4,647 | 330 |
| Araranguá | 342 | 545 | 159 |
| Criciúma | 1,012 | 3,375 | 333 |
| Siderópolis | - | 197 | - |
| Sombrio | - | 85 | - |
| Turvo | - | 210 | - |
| Urussanga | 54 | 235 | 435 |
| <u>AMUREL</u> | 1,776 | 5,572 | 314 |
| Armazém | - | 107 | - |
| Braço do Norte | 148 | 578 | 391 |
| Gravatal | - | 95 | - |
| Imaruí | 79 | 96 | 122 |
| Imbituba | 119 | 307 | 258 |
| Jaguaruna | - | 141 | - |
| Laguna | 397 | 1,406 | 354 |
| Orleans | 112 | 522 | 466 |
| Pedras Grandes | - | 39 | - |
| Rio Fortuna | - | 92 | - |
| Tubarão | 921 | 2,189 | 238 |
| South Santa Catarina | 3,184 | 10,219 | 321 |

Source: Coordenadoria Regio. de Educação do Estado de Santa Catarina, unpublished.

Table 21

GRADE 11 PROGRAMS BY MUNICIPALITIES, SOUTH SANTA CATARINA, 1974-1975

| <u>Technical and Support Programs</u> | AMSESC | AVUREL | South Santa Catarina | Araranguá | Criciúma | Siderópolis | Soebrio | Turvo | Urussanga | ARMAZÉM | braço do Norte | Gravatal | Imaruí | Imbituba | Jaguaruna | Laguna | Orleans | Pedras Grandes | Rio Fortuna | São Ludgero | Tubarão |
|---|--------|--------|----------------------|-----------|----------|-------------|---------|-------|-----------|---------|----------------|----------|--------|----------|-----------|--------|---------|----------------|-------------|-------------|---------|
| Common Nucleus Only (1st and 2nd years) | 1 | 1 | 2 | - | - | - | 1 | - | - | - | - | - | - | - | - | - | - | 1 | - | - | - |
| Administrative Assistant | 1 | 1 | 2 | - | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Office Assistant | - | 3 | 3 | - | - | - | - | - | - | 1 | - | 1 | - | - | - | - | - | - | - | - | - |
| Laboratory Assistant | - | 1 | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Nurse Assistant | 1 | 1 | 2 | - | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Editing Assistant | 2 | 1 | 3 | - | 2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Translator and Interpreter | 2 | 1 | 3 | - | 2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Civil Defense | 1 | - | 1 | - | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Soil Analysis | - | 1 | 1 | - | - | - | - | - | - | - | - | - | - | - | - | 1 | - | - | - | - | - |
| Chemical Analysis | 1 | 1 | 2 | - | 1 | - | - | - | - | - | - | - | - | - | - | 1 | - | - | - | - | - |
| Accounting | 1 | 4 | 5 | - | 1 | - | - | - | - | - | 1 | - | - | - | - | 1 | 1 | - | - | - | 1 |
| Instructor | 4 | 7 | 11 | 1 | 2 | - | - | - | 1 | - | 1 | - | 1 | 1 | - | 1 | 1 | - | 1 | - | 1 |
| Scientific | 4 | 1 | 5 | - | 2 | 1 | - | 1 | - | - | - | - | - | - | 1 | - | - | - | - | - | 1 |
| Classical | 1 | 1 | 2 | - | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1 |
| Secretary | 2 | 3 | 5 | - | 2 | - | - | - | - | - | - | - | - | - | - | 1 | 1 | - | - | - | 1 |
| Administrative Clerk | 1 | 2 | 3 | - | 1 | - | - | - | - | - | - | - | - | - | - | 1 | - | - | - | - | 1 |
| Chemistry | - | 2 | 2 | - | - | - | - | - | - | - | - | - | - | - | - | 1 | - | - | - | - | 1 |
| Nursing | - | 1 | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1 |
| Home Economist | - | 1 | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1 |
| Statistics | - | 1 | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1 |
| Interior Decoration | 1 | - | 1 | - | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Electrical Wiring | 1 | - | 1 | - | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Electro-mechanical | 1 | - | 1 | - | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Mining | 1 | - | 1 | - | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Design (Technical) | 1 | - | 1 | - | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Administration | 2 | - | 2 | 1 | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Clinical Analysis | 1 | - | 1 | - | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1 |
| Total | 39 | 34 | 64 | 2 | 24 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 8 | 3 | 1 | 1 | 1 | 13 |

Sources: Coordenadoria Regional de Educação do Estado de Santa Catarina, unpublished.

FESSC and FUCRI.

Centro Intercolegial Integrado de Tubarão.

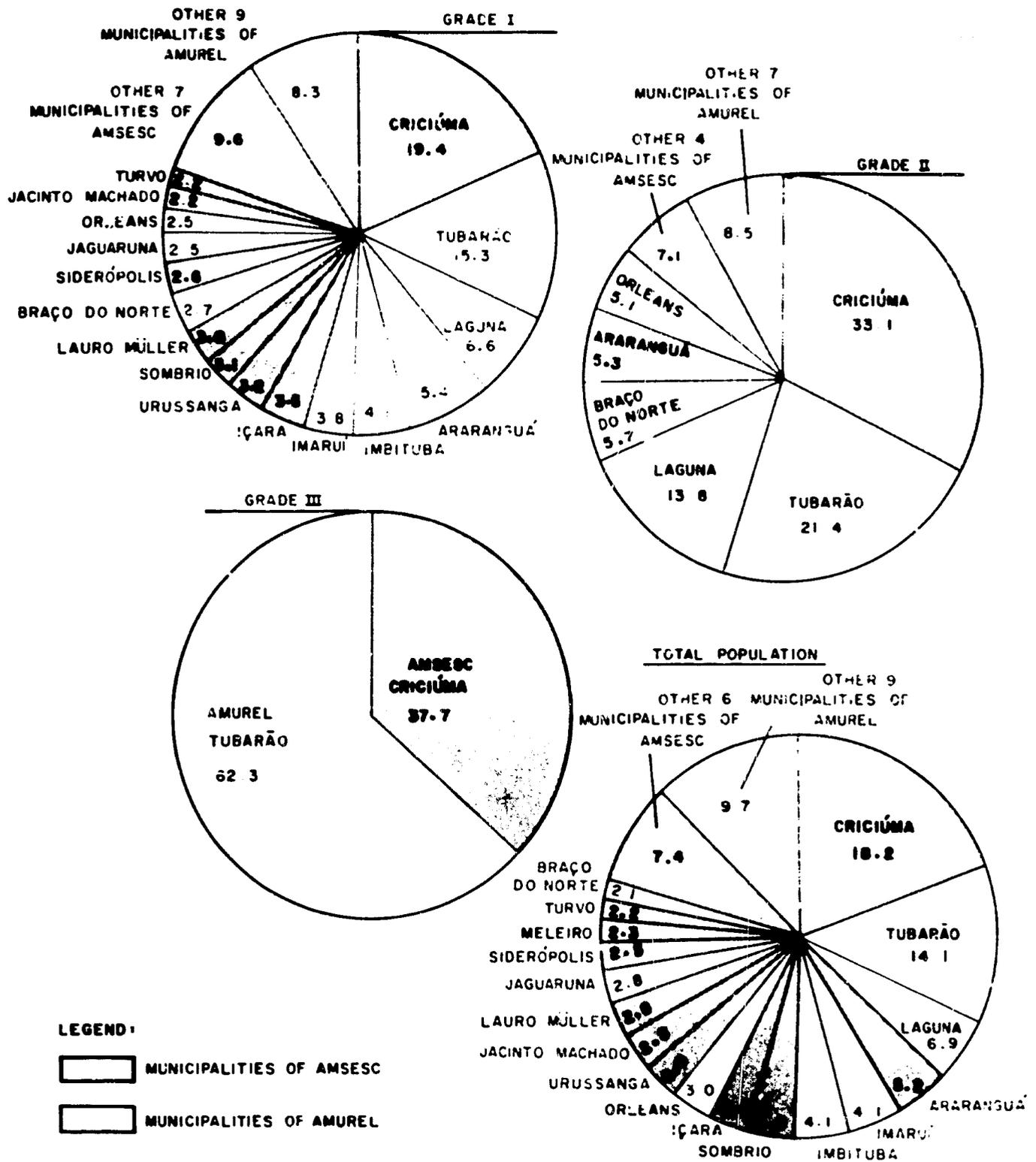
Table 22
 GRADE III PROGRAMS, AMSESC AND AMUREL
 SOUTH SANTA CATARINA, 1974

| <u>Programs</u> | <u>AMSESC (FUCRI)</u> | <u>AMUREL (FESSC)</u> | <u>South Santa Catarina</u> |
|---|---------------------------|---------------------------|---------------------------------|
| <u>Offered in 1974</u> | | | |
| Master in Education | 1 | 1 | 2 |
| Qualified School Administrator | (1) | (1) | (2) |
| Qualified School Supervisor | (1) | (1) | (2) |
| Qualified Educational Counselor | (1) | (1) | (2) |
| Master in Mathematics | 1 | 1 | 2 |
| Master in Biological Science | 1 | 1 | 2 |
| Master in Social Studies | 1 | 1 | 2 |
| Master in Language | 1 | 1 | 2 |
| Master in Plastic Design | 1 | - | 1 |
| Master in Philosophy | - | 1 | 1 |
| Master in Technical | - | 1 | 1 |
| Baccalaureate in Economics | - | 1 | 1 |
| Baccalaureate in Accounting | - | 1 | 1 |
| Baccalaureate in Administration | - | 1 | 1 |
| Baccalaureate in Physical Education and Sports | 1 | - | 1 |
| <u>Program for 1975</u> | | | |
| Baccalaureate in Surveying | 1 | - | 1 |
| Master in Geography | - | 1 | 1 |
| Master in History | - | 1 | 1 |
| <u>Program for 1976</u> | | | |
| Baccalaureate in Administration and Accounting | 1 | - | 1 |
| Baccalaureate in Nursing | - | 1 | 1 |
| Baccalaureate in Industrial Chemistry | - | 1 | 1 |
| Baccalaureate in Social Services | - | 1 | 1 |
| Existing in 1974 | 7 | 10 | 17 |
| Additional for 1975 | 8 | 12 | 20 |
| Additional for 1976 | 9 | 15 | 24 |

Source: FUCRI and FESSC.

Figure 1

PERCENT DISTRIBUTION OF STUDENT REGISTRATION IN ALL THREE GRADES BY MUNICIPALITIES, AMSESC AND AMUREL, 1974



Sources: Coordenadoria Regional de Educação do Estado de Santa Catarina, unpublished. FESSC and FUCRI.

Health systems in the area of South Santa Catarina are another factor of great concern to the population of the area. Data were not easily available, so most of the information presented below was gathered by field teams from FESSC that surveyed this particular topic. As shown by Map 5, nearly all the municipalities, with the exception of Santa Rosa de Lima and São Ludgero, have "sanitary units." The existence of sanitary units, of course, is not sufficient, since the primary purpose of these units is to provide vaccinations, child health care, and such.

In general, the level of health care services is low in the area. Only 16% of the population has access to treated water in the AMSESC area; in the AMUREL area, it reaches 21.5% of the population. As a further example, in AMSESC, with a total population of 293,849 persons, there are only 9,460 connections to a treated water system. In AMUREL, out of a population of 256,238, there are 10,767 connections to the system.^{1/}

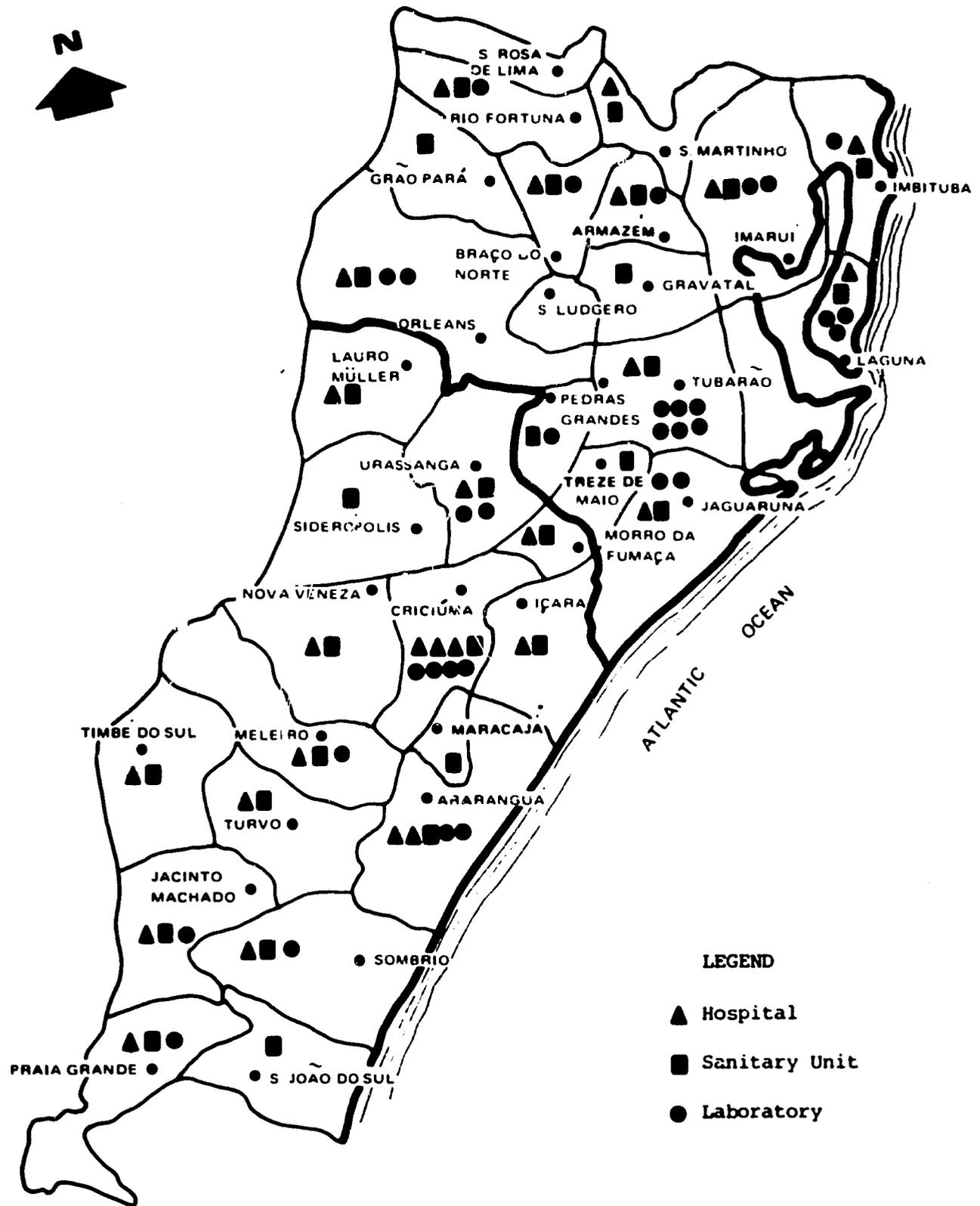
The doctor-to-inhabitant ratio is 0.00026 doctor per person in AMSESC and 0.00027 doctor per person in AMUREL. In other words, there are 3,816 inhabitants for each physician in AMSESC and 3,713 in AMUREL. The distribution is shown in Table 23, which also includes data on patients per hospital bed, number of hospitals, and ratios of services. Deficiencies are even greater, of course, for certain individual health services, such as surgery, gynecology, pediatrics, cardiology, urology, dermatology, neurology, and others. In these instances, one may find only one center capable of attending a patient.

What few health services are available tend to congregate around the larger urban centers such as Tubarão and Criciúma, leaving the rural areas completely lacking in proper medical attention. Table 24 recapitulates the mortality rate for the region by municipalities. The FESSC research team has done vast survey work in this area to determine the mortality rates resulting from a large number of diseases or other causes such as childbirth or lack of attention, but the data are not included in this report.

Another interesting social problem is housing, with South Santa Catarina experiencing a great need for additional housing. In 1970, there were 2.3 persons per bedroom in AMSESC, 2.28 persons per bedroom in AMUREL, and the state

^{1/} Survey data gathered by FESSC research team for this report.

Map 5
 HEALTH SERVICE DISTRIBUTION
 SOUTH SANTA CATARINA, 1975



Source: FFSSC research team, 1975.

Table 23

HEALTH SERVICES
SOUTH SANTA CATARINA, 1975

| Municipality | Popu- lation | Physi- cians | Hos- pitals | Beds | Coefficients | |
|------------------|-----------------|-----------------|----------------|-------|---------------------------|---------------------|
| | | | | | Inhabitants/ Physician | Inhabitants/ Bed |
| AMSESC | 293,849 | 77 | 16 | 1,258 | 3,816 | 233 |
| Araranguá | 28,619 | 6 | 2 | 102 | 4,770 | 280 |
| Criciúma | 99,609 | 46 | 3 | 622 | 2,165 | 160 |
| Içara | 18,849 | 1 | 1 | 40 | 18,849 | 471 |
| Jacinto Machado | 15,849 | 2 | 1 | 50 | 7,929 | 317 |
| Lauro Müller | 15,808 | 2 | 1 | 76 | 7,904 | 208 |
| Matacajá | 4,336 | 2 | - | - | 2,168 | - |
| Meleiro | 12,599 | 1 | 1 | 20 | 12,599 | 630 |
| Morro da Fumaça | 5,179 | 1 | 1 | 30 | 5,179 | 172 |
| Nova Veneza | 7,674 | 2 | 1 | 65 | 3,837 | 118 |
| Praia Grande | 8,679 | 2 | 1 | 42 | 4,339 | 206 |
| São João do Sul | 8,783 | - | - | - | - | - |
| Siderópolis | 13,731 | 2 | - | - | 6,865 | - |
| Sombrio | 19,622 | 2 | 1 | 45 | 9,811 | 436 |
| Timbé do Sul | 6,472 | 1 | 1 | 8 | 6,472 | 809 |
| Turvo | 11,813 | 2 | 1 | 53 | 5,906 | 223 |
| Urussanga | 16,217 | 5 | 1 | 105 | 3,243 | 154 |
| AMUREL | 256,238 | 69 | 10 | 823 | 3,713 | 311 |
| Armazém | 7,508 | 2 | 1 | 32 | 3,754 | 235 |
| Braço do Norte | 11,739 | 3 | 1 | 90 | 3,913 | 130 |
| Grão Pará | 7,387 | 3 | - | - | 2,462 | - |
| Gravatal | 9,521 | - | - | - | - | - |
| Imaruí | 22,483 | 4 | 1 | 32 | 5,621 | 702 |
| Imbituba | 22,607 | 6 | 1 | 97 | 3,768 | 233 |
| Jaguaruna | 15,551 | 3 | 1 | 40 | 5,184 | 389 |
| Laguna | 37,479 | 6 | 1 | 98 | 6,246 | 382 |
| Orleans | 16,435 | 3 | 1 | 80 | 5,478 | 205 |
| Pedras Grandes | 6,396 | - | - | - | - | - |
| Rio Fortuna | 4,683 | 2 | 1 | 18 | 2,341 | 260 |
| Santa R. de Lima | 1,895 | - | - | - | - | - |
| São Ludgero | 5,260 | 1 | - | - | 5,260 | - |
| São Martinho | 3,444 | 1 | 1 | 10 | 3,444 | 344 |
| Treze de Maio | 6,934 | - | - | - | - | - |
| Tubarão | 76,916 | 34 | 1 | 326 | 2,262 | 236 |

Source: FESSC field survey.

Table 24
MORTALITY RATE
SOUTH SANTA CATARINA, 1975

| <u>Municipality</u> | <u>Mortality - General</u> | | <u>Mortality - Infantile</u> | | <u>Population</u> | |
|-------------------------|----------------------------|----------------------------------|------------------------------|-----------------------------------|-------------------|---|
| | <u>No. of Deaths</u> | <u>No. of Inhabitants /1,000</u> | <u>No. of Births</u> | <u>No. of Deaths Under 1 Year</u> | | <u>No. of Deaths /1,000 Inhabitants</u> |
| <u>AMSESC</u> | 1,274 | 4.83 | 6,214 | 446 | 71.77 | 263,286 |
| Araranguá | 130 | 4.95 | 474 | 41 | 86.49 | 26,227 |
| Criciúma | 555 | 6.81 | 2,417 | 259 | 107.15 | 81,451 |
| Içara | 73 | 4.26 | 340 | 29 | 85.29 | 17,128 |
| Jacinto Machado | 28 | 2.04 | 289 | 3 | 10.38 | 13,682 |
| Lauro Müller | 80 | 5.13 | 458 | 27 | 58.95 | 15,576 |
| Maracajá | 10 | 2.45 | 90 | 1 | 11.11 | 4,075 |
| Meleiro | 24 | 2.12 | 241 | 2 | 8.29 | 11,293 |
| Morro da Fumaça | 16 | 3.35 | 92 | 4 | 43.47 | 4,769 |
| Nova Veneza | 16 | 1.96 | 173 | 2 | 11.56 | 8,157 |
| Praia Grande | 39 | 4.78 | 137 | 5 | 36.49 | 8,146 |
| São João do Sul | 19 | 2.21 | 124 | 4 | 32.25 | 8,593 |
| Siderópolis | 83 | 6.32 | 237 | 22 | 92.82 | 13,128 |
| Sombrio | 72 | 4.02 | 339 | 16 | 47.19 | 17,910 |
| Timbê do Sul | 11 | 1.74 | 38 | - | - | 6,310 |
| Turvo | 40 | 3.57 | 262 | 9 | 34.35 | 11,177 |
| Urussanga | 78 | 4.97 | 503 | 22 | 43.73 | 15,664 |
| <u>AMUREL</u> | 1,294 | 5.53 | 5,138 | 291 | 56.63 | 233,684 |
| Armazém | 19 | 2.66 | 127 | 4 | 31.49 | 7,119 |
| Braço do Norte | 60 | 5.70 | 260 | 19 | 73.07 | 10,524 |
| Grão Pará | 23 | 3.27 | 160 | 2 | 12.50 | 7,023 |
| Gravatal | 34 | 4.03 | 117 | - | - | 8,432 |
| Imaruí | 93 | 4.38 | 201 | 16 | 79.60 | 21,189 |
| Imbituba | 166 | 8.08 | 588 | 44 | 44.82 | 20,541 |
| Jaguaruna | 56 | 3.88 | 294 | 13 | 44.21 | 14,412 |
| Laguna | 297 | 8.45 | 964 | 70 | 72.61 | 35,112 |
| Orleans | 68 | 4.30 | 374 | 19 | 50.80 | 15,802 |
| Pedras Grandes | 29 | 4.90 | 157 | 5 | 31.84 | 5,913 |
| Rio Fortuna | 9 | 2.02 | 80 | 1 | 12.50 | 4,441 |
| Santa R. de Lima | 4 | 2.25 | 48 | - | - | 1,774 |
| São Ludgero | 25 | 5.41 | 112 | 7 | 62.50 | 4,615 |
| São Martinho | 12 | 3.42 | 85 | - | - | 3,506 |
| Treze de Maio | 14 | 2.21 | 147 | 2 | 13.60 | 6,334 |
| Tubarão | 385 | 5.75 | 1,424 | 89 | 62.50 | 66,947 |
| State of Santa Catarina | 17,066 | 5.87 | 71,405 | 4,844 | 67.83 | 2,903,360 |

Source: Departamento Estadual de Estadística de Santa Catarina.

average was 2.24 persons per bedroom.^{1/} At the same time, some 485,000 persons were living in 83,000 private dwellings in South Santa Catarina. To the existing lack of housing must be added the constant urban renewal trend and the demolition of housing areas to make way for new roads and industries; all of this is causing a severe housing shortage in all of the areas being reviewed. Table 25 presents a summary of the type of housing presently available to the population. In summary, there is a great lack of available housing and most of the existing structures are below standard.

Agricultural Summary

A brief analysis of the land use in the area of South Santa Catarina will show that only some 17.3% of the total land area is being cultivated, 24.5% is in pastures, 37.2% in hills and mountains, 9.8% in native forest, 4.1% in sand dunes, 2.9% under flood conditions, and 4.2% subject to flooding.^{2/} According to this information, 165,894 hectares are under cultivation and another 232,835 hectares are in pastures out of the total available land of 940,902 hectares. Unfortunately, the 39,174 hectares subject to flooding contain the best soil in the area, since they are the fertile basins of the rivers Tubarão, Urussanga, Araranguá, and Mampituba. Flood control has been a constant need in the area and most readers will recall the tragic flood of March 1974.

To further aggravate the problem, the whole area of South Santa Catarina traditionally has been characterized by small farmers (minifúndio.) According to unpublished data from the Instituto Nacional de Colonização e Reforma Agrária, 1967, small farmers comprised 94.6% of the farmers in AMSESC and 94.0% in AMUREL. Table 26 provides details of the land distribution within the two subject mini-regions. For the purpose of this study, small farms are those which have fewer than 25 hectares and large farms have between 25 and 100 hectares.

What little information is available on agricultural products in the area of South Santa Catarina is at best not very reliable. Consequently, most of the information presented below was generated by the research staff assigned to this case study and is, at best, a fair estimate. Table 27 shows the main

^{1/} Governo do Estado de Santa Catarina, Censos Demográficos de Santa Catarina, 1960 and 1970, Fundação Instituto Brasileiro de Geografia e Estatística, Brasília, Brazil, 1972.

^{2/} Departamento Estadual de Estatística de Santa Catarina, estimated in 1971.

Table 26
RURAL LAND DISTRIBUTION
SOUTH SANTA CATARINA, 1967

| <u>Geographic Area</u> | <u>No. of Farms</u> | <u>Percent</u> | <u>Area (hectares)</u> | <u>Percent</u> |
|--------------------------|---------------------|----------------|------------------------|----------------|
| <u>Small</u> | | | | |
| AMSESC | 21,218 | 94.6 | 272,148 | 69.1 |
| AMUREL | <u>20,276</u> | 94.0 | <u>228,565</u> | 67.9 |
| South Santa Catarina | 41,494 | 94.3 | 510,713 | 68.5 |
| <u>Large</u> | | | | |
| AMSESC | 1,053 | 4.7 | 114,417 | 28.1 |
| AMUREL | <u>1,175</u> | 5.4 | <u>97,386</u> | 29.0 |
| South Santa Catarina | 2,228 | 5.0 | 211,803 | 28.5 |
| <u>Rural Enterprises</u> | | | | |
| AMSESC | 160 | 0.7 | 11,257 | 2.8 |
| AMUREL | <u>130</u> | 0.6 | <u>10,458</u> | 3.1 |
| South Santa Catarina | 290 | 0.6 | 21,715 | 3.0 |

Source: Departamento Estadual de Estadística de Santa Catarina, unpublished data for 1967.

Table 27-A

MAIN AGRICULTURAL PRODUCTS OF SOUTH SANTA CATARINA BY MICRO-REGIONS, 1971-1973

| Product | Unit | Production | | | Value (Cr 1,000) | | |
|----------------|------------|------------|-----------|-----------|------------------|----------|----------|
| | | 1971 | 1972 | 1973 | 1971 | 1972 | 1973 |
| AMGESC | | | | | | | |
| Rice | bag | 844,190 | 729,800 | 810,263 | 17,803.3 | 21,818.4 | 26,549.7 |
| Bananas | stem | 2,657,570 | 2,742,762 | 5,962,045 | 4,141.1 | 4,146.1 | 13,779.0 |
| Sweet Potatoes | ton | 93,540 | 90,880 | 63,238 | 5,623.2 | 6,540.7 | 11,828.5 |
| Beans | bag | 91,113 | 102,376 | 87,701 | 5,023.8 | 5,475.4 | 8,431.2 |
| Tobacco | 25-lb. wt. | 725,802 | 593,777 | 755,823 | 19,251.0 | 17,273.8 | 32,057.6 |
| Manioc | ton | 409,965 | 393,488 | 288,819 | 25,055.7 | 28,491.9 | 21,019.6 |
| Corn | bag | 730,970 | 662,161 | 1,038,230 | 10,357.8 | 12,911.8 | 22,561.1 |
| AMUREL | | | | | | | |
| Rice | bag | 276,880 | 378,340 | 194,416 | 5,381.1 | 9,977.9 | 6,207.0 |
| Bananas | stem | 506,800 | 576,030 | 1,309,305 | 1,222.3 | 2,035.3 | 5,337.3 |
| Sweet Potatoes | ton | 109,900 | 110,621 | 78,800 | 4,590.7 | 4,699.8 | 5,593.0 |
| Beans | bag | 45,640 | 44,110 | 53,110 | 2,217.2 | 2,358.9 | 6,012.1 |
| Tobacco | 25-lb. wt. | 236,735 | 225,230 | 206,244 | 5,479.9 | 5,991.0 | 7,435.2 |
| Manioc | ton | 496,620 | 299,213 | 295,010 | 18,187.1 | 23,823.7 | 22,770.0 |
| Corn | bag | 370,000 | 281,160 | 390,650 | 4,627.4 | 4,588.0 | 9,193.5 |

Source: Departamento Estadual de Estatística de Santa Catarina, Anuários Estadísticos 1971, 1972, 1973, Florianópolis, Santa Catarina, respective years.

Table 27-B

VALUE AND PERCENTAGE DISTRIBUTION OF THE PRINCIPAL AGRICULTURAL PRODUCTS
IN SOUTH SANTA CATARINA RELATIVE TO TOTAL PRODUCTION OF THE STATE, 1973

| Product | AMSESC | | AMUREL | | South Santa Catarina | |
|----------------|---------------------|---------|---------------------|---------|----------------------|---------|
| | Value (Cr 1,000) | Percent | Value (Cr 1,000) | Percent | Value (Cr 1,000) | Percent |
| Manioc | 21,020 | 1.2 | 22,770 | 1.3 | 43,790 | 2.5 |
| Tobacco | 32,057 | 1.7 | 7,435 | 0.4 | 39,493 | 2.1 |
| Rice | 26,550 | 1.5 | 6,207 | 0.3 | 32,758 | 1.8 |
| Corn | 22,561 | 1.2 | 9,194 | 0.5 | 31,755 | 1.7 |
| Bananas | 13,779 | 0.7 | 5,337 | 0.3 | 19,116 | 1.0 |
| Sweet Potatoes | 11,828 | 0.6 | 5,593 | 0.3 | 17,421 | 0.9 |
| Beans | 8,431 | 0.5 | 6,012 | 0.3 | 14,443 | 0.8 |
| Potatoes | 3,656 | 0.2 | 3,800 | 0.2 | 7,456 | 0.4 |
| Onions | 1,180 | 0.1 | 2,801 | 0.1 | 3,981 | 0.2 |
| Tomatoes | <u>251</u> | 0 | <u>3,052</u> | 0.2 | <u>3,603</u> | 0.2 |
| Subtotal | 141,313 | 7.7 | 72,501 | 3.9 | 213,816 | 11.6 |
| Others | <u>7,195</u> | 0.3 | <u>6,357</u> | 0.4 | <u>13,552</u> | 0.7 |
| Total | 148,508 | 8.0 | 78,868 | 4.3 | 227,368 | 12.3 |

Source: Departamento Estadual de Estadística de Santa Catarina, Anuário Estatístico 1973, Florianópolis, Santa Catarina.

agricultural production for the area during the years 1971 to 1973. As may be seen, the area is agriculturally productive in spite of extensive land subdivision and severe geographical limitations on land use. The 1973 flood caused a loss of about 127 million cruzeiros in agricultural products alone, according to the state report to the President of the Republic, dated April 1974.

Cattle raising is relatively unimportant in the area, again because of the small farm problem. In 1972, it was estimated AMSESC had about 156,000 head of cattle and AMUREL had some 136,000 head; both together represent about 13% of the state total.

The original settlers from Germany and Italy brought with them the tradition of hog raising. For years, this was carried out by the small farmers, but in recent years, it has been more profitable to plant tobacco than to raise hogs. As a result, the swine herd has greatly decreased in the AMSESC area, dropping from 225,000 in 1969 to some 162,000 in 1972. The same holds true for AMUREL, where it has decreased from 310,000 in 1969 to 167,000 in 1972. The present total represents less than 8% of the state herd.

Chicken farming has grown in the past few years, and at present, South Santa Catarina has about 13.8% of all the poultry production in the state.

Industrial Summary

The industrial development of South Santa Catarina has been slow in getting started and only in the past five years, under the guidance and assistance of the Fundação Educacional do Sul de Santa Catarina, has any systematic effort been implemented. In 1971, of the 2,326 industrial establishments employing 25,075 persons in South Santa Catarina, about 1,345 establishments (58%) were small-scale industry, artisan, or cottage activities.^{1/}

Table 28 gives the distribution of industrial enterprises and employment by municipalities. In 1971, the number of workers per establishment averaged about 18.9 persons in the AMSESC area, about seven persons in the AMUREL area,

^{1/} Georgia Institute of Technology and Fundação Educacional do Sul de Santa Catarina, "Programa de Desenvolvimento de Pequena e Média Empresa," February 1975, pp. 11-12, unpublished.

Table 28

NUMBER OF INDUSTRIAL ESTABLISHMENTS AND PERSONS EMPLOYED, BY MUNICIPALITIES
SOUTH SANTA CATARINA, 1970-1971

| Geographic Area and Municipalities | No. of | | Persons Employed | |
|---------------------------------------|--------|-------|------------------|--------|
| | 1970 | 1971 | 1970 | 1971 |
| South Santa Catarina | 1,342 | 2,326 | 14,576 | 25,075 |
| AMSESC | 766 | 728 | 10,795 | 13,754 |
| Araranguá | 150 | 80 | 569 | 694 |
| Criciúma | 193 | 143 | 5,685 | 6,911 |
| Içara | 26 | 29 | 86 | 460 |
| Jacinto Machado | 31 | 39 | 82 | 203 |
| Lauro Müller | 15 | 20 | 1,171 | 1,186 |
| Maracajá | 26 | 20 | 59 | 131 |
| Meleiro | 29 | 28 | 98 | 172 |
| Morro da Fumaça | 29 | 29 | 305 | 508 |
| Nova Veneza | 13 | 31 | 159 | 185 |
| Praia Grande | 29 | 33 | 88 | 105 |
| São João do Sul | 20 | 43 | 38 | 181 |
| Siderópolis | 22 | 20 | 339 | 46 |
| Sombrio | 62 | 57 | 261 | 330 |
| Timbé do Sul | 24 | 30 | 58 | 114 |
| Turvo | 37 | 44 | 155 | 203 |
| Urussanga | 60 | 82 | 1,642 | 2,325 |
| AMUREL | 576 | 1,598 | 3,781 | 11,321 |
| Armazém | 21 | 22 | 46 | 111 |
| Braço do Norte | 49 | 74 | 181 | 364 |
| Grão Pará | 34 | 67 | 56 | 379 |
| Gravatal | 26 | 131 | 49 | 576 |
| Imaruí | 36 | 360 | 165 | 1,751 |
| Imbituba | 22 | 278 | 724 | 1,949 |
| Jaguaruna | 31 | 100 | 88 | 434 |
| Laguna | 64 | 169 | 504 | 1,653 |
| Orleans | 49 | 111 | 264 | 511 |
| Pedras Grandes | 21 | 34 | 113 | 142 |
| Rio Fortuna | 7 | 19 | 14 | 54 |
| Santa Rosa de Lima | 15 | 14 | 18 | 49 |
| São Ludgero | 22 | 26 | 84 | 203 |
| São Martinho | 23 | 16 | 51 | 51 |
| Treze de Maio | 10 | 32 | 52 | 185 |
| Tubarão | 146 | 145 | 1,372 | 2,909 |

Source: Industrial Census, Santa Catarina, 1970 and FESSC field survey.

and about 10.8 persons in South Santa Catarina.^{1/} The table also indicates that the AMUREL area's share of South Santa Catarina's industrial employment increased from 25.9% in 1970 to 45.1% one year later.

The larger industries are mostly in the AMSESC area, mainly around the city of Criciúma. The "Censo do Estrato" reports for 1974 that there were 62 large industries (on the basis of employment and sales) in the two mini-regions, of which 70.9% were in AMSESC and only 18.7% in AMUREL. These 62 industries had in 1974 a total employment of 14,538 persons and sales of about 928 million cruzeiros. As indicated, AMSESC had 41 industries and 11,220 employees, while AMUREL had 21 industries and 3,318 jobs.

Of the 62 large industrial establishments identified by the 1974 "Censo do Estrato," the vast majority are engaged in mineral extraction (coal mining) and nonmetallic minerals. These two industries use about 73% of the manpower and generate over 63% of the value of sales. Other classifications are wood products, food, leather, garments and footwear, tobacco, and power generation.

The industry of South Santa Catarina presently is based on coal as an energy source and as an exportable product to the steel mills in other areas. All future industrial plans (National Development Plans) for the area are geared to coal and products produced from it. The area's small-scale industry is very small and in an early stage of development. To a certain degree, South Santa Catarina may be said to be a colony of the industrial power to the north of the area. Industrial development is possible, however, as will be shown later when the present FESSC development plan for the region is discussed.

Commerce Summary

The commercial activities for the mini-regions in many instances are far more important than any other. In 1970, according to the information gathered by the Censo Demografico, some 19,235 persons were employed by commercial enterprises in AMSESC and 21,570 in AMUREL, for a total of 40,805 in South Santa Catarina; the total state figure was 256,147.

^{1/} Fundação Educacional do Sul de Santa Catarina, Censo Industrial 1971-1972, Departamento de Pesquisa e Desenvolvimento, Tubarão, Santa Catarina, Brazil, 1972, unpublished.

Table 29 presents the number of establishments in the commercial sector for 1973 in the two mini-regions, South Santa Catarina, and the state. The research staff also identified that in 1974 some 62% of all items sold in stores were produced outside the area for the mini-region of AMSESC; in the AMUREL area, the figure ran over 69%. In other words, the stores and the population depend largely on products manufactured outside the area of South Santa Catarina. Products most often identified were cement, aluminum, steel plate, cast iron parts, metal forms, acids, nitrates, phenol, dyes, solvents, plastics, resins, pigments, paints and varnishes, brass parts, copper, explosives, fuses, caps, pipe, electrodes, alcohol, leather, textiles, buttons, threads, flour, sugar, and lard.

Infrastructure Study

The most important factor in South Santa Catarina's infrastructure is the highway network. The BR 101 highway creates an axis running north and south, parallel to the coastline for about 175 kilometers. This two-lane paved road links the southern part of Brazil (also the border) with the large urban areas of São Paulo and Rio de Janeiro. The state highway system links BR 101, but does not connect all of the micro-region, as may be seen on Map 6.

The area also has rail service provided by the Rede Ferroviaria Federal S. A., which connects the port of Imbituba with the coal mines in Criciúma, Urussanga, and Siderópolis. The line running to Tubarão was destroyed during the March 1974 flood, and the present system has a total of 180 kilometers. This is the only rail service in Brazil that is totally steam, using coal as fuel. The railroad moves some two million tons per year to the port.

No air transportation is available to the area; the nearest two main airports are at Florianópolis and Porto Alegre. Two ports serve the area (Imbituba and Laguna), but both are limited in their installations.

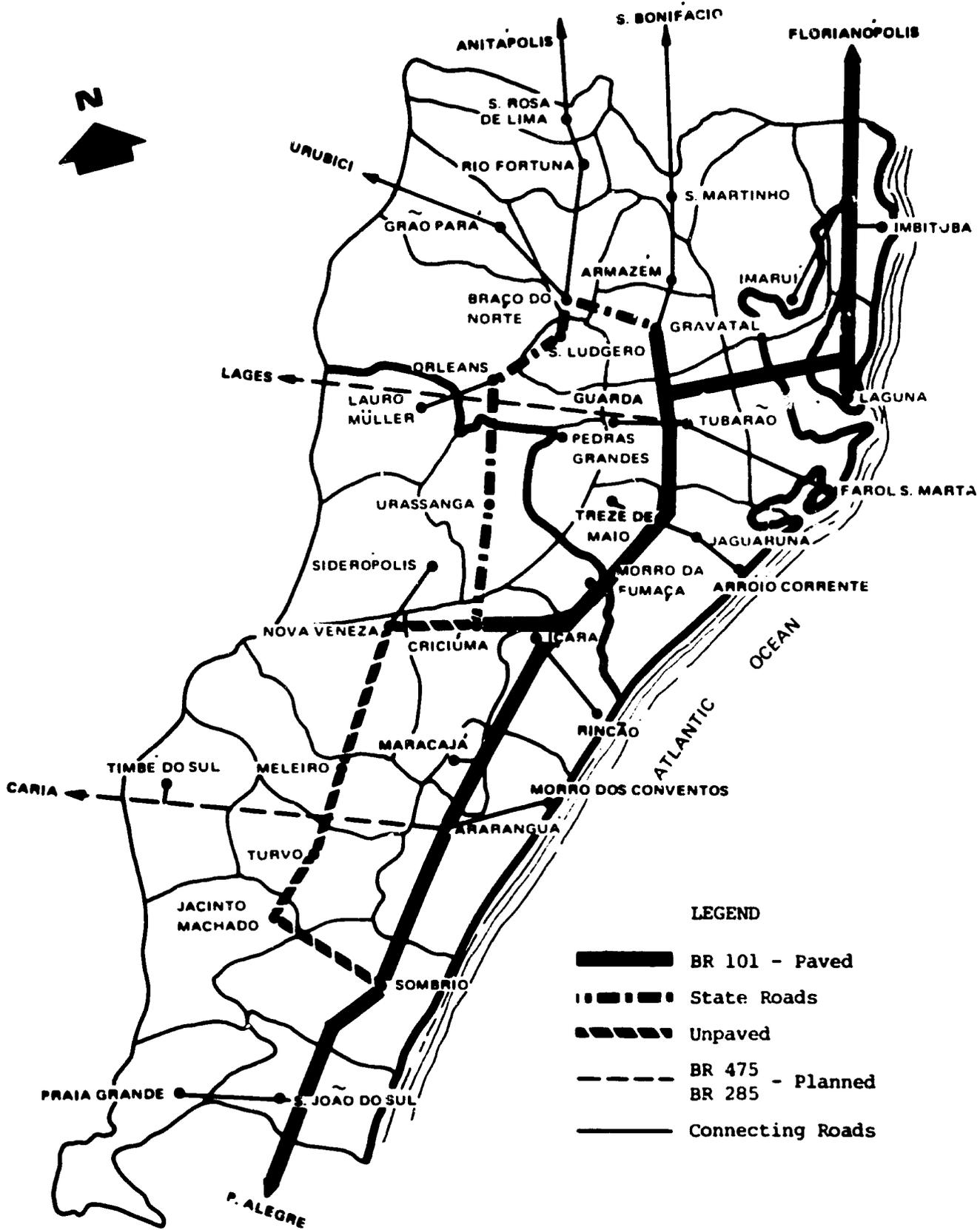
Santa Catarina has 345,000 kilowatts of installed electrical generating capacity, with most of the generating plants being in South Santa Catarina. Two large units are in South Santa Catarina -- the Jorge Lacerda plant and the Unidade Termoeletrica de Capivarí. Together they have 254,000 kilowatts of installed capacity.

Table 29
 NUMBER OF COMMERCIAL ESTABLISHMENTS
 SOUTH SANTA CATARINA, 1973

| Establishments | Geographic Area | | | | | | | |
|-----------------|-----------------|---------|--------|---------|----------------------|---------|----------------|---------|
| | AMSESC | | AMUREL | | South Santa Catarina | | Santa Catarina | |
| | Number | Percent | Number | Percent | Number | Percent | Number | Percent |
| Banks | 17 | 6.2 | 20 | 7.2 | 37 | 13.4 | 276 | 100.0 |
| Commercial | 2,204 | 9.8 | 2,120 | 9.5 | 4,324 | 19.3 | 22,390 | 100.0 |
| Wholesale | 35 | 8.1 | 31 | 7.2 | 66 | 15.3 | 430 | 100.0 |
| Retail | 2,169 | 9.9 | 2,089 | 9.5 | 4,258 | 19.4 | 21,969 | 100.0 |
| Services | 659 | 7.5 | 602 | 6.9 | 1,261 | 14.4 | 8,730 | 100.0 |
| Hotels | 33 | 5.9 | 46 | 8.1 | 79 | 14.0 | 564 | 100.0 |
| Boarding Houses | 19 | 6.7 | 19 | 6.7 | 38 | 13.4 | 282 | 100.0 |
| Restaurants | 66 | 6.7 | 77 | 6.7 | 143 | 14.4 | 991 | 100.0 |
| Bars | 459 | 8.2 | 405 | 7.2 | 864 | 15.4 | 5,616 | 100.0 |
| Gas Stations | 82 | 10.3 | 55 | 6.9 | 137 | 17.2 | 795 | 100.0 |

Source: Departamento Estadual de Estatística de Santa Catarina, Noticiário Estadístico 1974, Florianópolis, Santa Catarina, Brazil, 1975.

Map 6
 STATE HIGHWAY SYSTEM
 SOUTH SANTA CATARINA, 1975



Source: FESSC staff.

PREVIOUS NATIONAL AND REGIONAL DEVELOPMENT PLANS

During the past 30 years of Brazilian development, the nation has had eight different plans oriented toward the orderly development of the country. Each of these will be briefly reviewed in this chapter. Only one other attempt was made prior to 1945 and that was the Plano Especial de Obras Publicas e Aparelhamento da Defesa Nacional, which was used to assist in guiding the national economy and adjusting it to the requirements of World War II. The eight plans enacted in the past 30 years are as follows:

- o Plano SALTE (1951-1955), administration of Eurico Gaspar Dutra.
- o Plano de Metas (1956-1961), administration of Juscelino Kubitschek.
- o Plano Trienal de Desenvolvimento Econômico e Social (1963-1965), administration of João Goulart.
- o Plano de Ação Econômica do Governo, PAEG, (1964-1967), administration of Castello Branco
- o Plano Decenal (1967-1976) e Programa Estrategico de Desenvolvimento, PED, (1968-1970), administration of Costa e Silva.
- o Programas de Metas e Bases para a Ação do Governo (1970-1973), administration of Médici.
- o I Plano Nacional de Desenvolvimento, PND I (1973-1974), administration of Médici.
- o II Plano Nacional de Desenvolvimento, PND II (1975-1979), administration of Geisel.

National Plans

As a result of the above eight basic national plans, many programs were developed, but space does not permit their review here. The most important ones were: Programa de Estabilização Monetária, 1958-1959; Programa de Integração Nacional, 1970; Proterra, 1971; Provale, 1972; Prodoeste, 1971; Prorural, 1971; PASEP, 1970; PIS, 1970; Programa de Grandes Empreendimentos; BEFIEX; Plano Basico de Desenvolvimento Cientifico e Tecnológico (I, II, III); Polonordeste, 1974; and Polocentro, 1945. A summary of the national plans follows:

Plano SALTE. Following World War II, for a number of years Brazil used up the financial reserves it had accumulated during the war to purchase capital

equipment overseas and start national industries. Unfortunately, the government did not recognize the fact that industrial development cannot be accomplished in a nation that has a food deficit, high levels of illiteracy, no infrastructure, a lack of health and educational systems, little or no technology, and small numbers of trained human resources. It was during the administration of President Dutra that Plano SALTE -- Saúde, Alimentação, Transportes, e Energia (Health, Food, Transportation, and Energy) -- came into being.

Approved in 1950, Plano SALTE was to be implemented over a five-year period. At the time it was considered very large, but compared with others that followed, it was a modest program. The following areas were given special consideration:

Health. The entire public health sector was covered, with special emphasis on the contagious diseases -- yellow fever, malaria, and others.

Food. Vast plans covered production of food and even involved nonfood agricultural products.

Transportation. No mass transport program was included, but it did have heavy investment plans in all other areas, particularly communications with the rich areas of the nation and the points of export for products.

Energy. The production of energy-producing raw materials was the main goal. Petroleum and coal were both given priority in the program. Also considered were hydroelectric installations, all of which led eventually to the creation of ELECTROBRAS, PETROBRAS, and Cia. Hidrelétrica do São Francisco (CHESF).

Table 30 presents the allocations on the basis of the 1948 cruzeiro. The government planned to cover up to 60% of the total out of national funds and the remaining 40% through international loans. Shortly after the program was started, it became apparent that the program did not adjust to the financial reality and inflation of the period. A mismatch also existed since no regional objectives were present to assist the economic development of the regions. In spite of great difficulties, the program had a moderate success, with GNP averaging a 6.8% increase yearly between 1947 and 1954.

Plano de Metas. The goals and objectives of this program developed by the administration of President Juscelino Kubitschek were far wider and yet more precise. The main objective was to start a healthy industrial development, and

Table 30
 ALLOCATIONS OF FUNDS - PLANO SALTE
 BRAZIL, 1951-1953
 (in millions of cruzeiros)

| <u>Sector</u> | <u>National Government</u> | <u>State, Municipal or Private</u> |
|----------------|--------------------------------|--|
| Health | 2,600 | |
| Food | 2,700 | |
| Transportation | 11,845 | |
| Petroleum | 2,500 | |
| Electricity | <u>750</u> | <u>7,422</u> |
| Total | 20,395 | 7,422 |

Source: Plano SALTE.

in so doing, the agricultural sector received little or no consideration, as well as social projects. The plan included an aggressive program of import substitution and the creation of "basic" industries. Thirty goals were set for the five basic sectors of energy, transportation, food, basic industries, and education. The educational project was focused on technical training, manpower development, and other industry-oriented activities.

In summary, the Plano de Metas was conceived as shown in Table 31.

The financial demand of this program was very high and the administration decided to print the necessary currency to provide for the plan; as a result, the nation entered into an inflation that led to the eventual creation of a program to stabilize the currency. The industrial development generated by this program took place principally in the central-south area, whereas the balance of the nation was still on the border of underdevelopment. In an attempt to assist the less favored areas, the government started the so-called "March to the West" and the eventual location in the state of Goias of the new capital, which was named Brasilia.

For the 1956-1961 period covered by this program, the GNP was not drastically changed (1.5% average), yet the industrial production went up 11.3% per year on the average.

Table 31
PLANO DE METAS, BRAZIL, 1956-1961

| <u>Sector Activity</u> | <u>Goal 1960</u> | <u>Government Investment (millions of US \$)</u> |
|----------------------------|------------------|--|
| Petroleum | | |
| Extraction | 90,000 lb./day | 267 |
| Refining | 175,000 lb./day | 98 |
| Transportation | 400 000 tons | 80 |
| Electricity | | |
| Hydroelectric Capacity | 5,100,000 kw | 277 |
| Coal | 2,500,000 tons | 6.3 |
| Rail Transportation | | |
| Refurbishment | | 100 |
| Rail Construction | 1,500 km | |
| Highways | | |
| Paving | 9,332 km | 263 |
| New | 8,657 km | 204 |
| Ports | | |
| Repairs | | 34 |
| Naval Construction | | 4.3 |
| Purchase of Ships | 200,000 tons | 21 |
| Steel Mill | | |
| Laminate | 2,300,000 tons | 170 |
| Plate | 50,000 tons | 1.6 |
| Paper | | |
| Cellulose | 200,000 tons | 17 |
| Paper (General) | 300,000 tons | 16 |
| Newsprint | 150,000 tons | 24 |
| Chemical Industry | | |
| Alkali | 140,000 tons | 16 |
| Sulphur | 70,000 tons | 1 |
| Cement | 5,000,000 tons | 15 |
| Meat Plant | 23,000 tons | 4 |
| Minerals Export | | |
| Iron | 8,000,000 tons | 44 |
| Manganese | 600,000 tons | |
| Total | | <u>2,217.2</u> |

Source: Conselho de Desenvolvimento - Documento No. 3.

Plano Trienal. The short period between the administration of Presidents Kubitschek, Quadros, and Goulart was a disconcerting one with no economic guidance; this led to decreases in all the economic indicators. The Plano Trienal was designed to be effective between 1962 and 1965, and the main objective was to bring back the economic indicators to the 1961 levels. The main sectors considered by this program were transportation, energy, communications, health, education, and research. Some of the highpoints of the plan were the following:

- o Assure a rate of increase in the national income of 7% per year and a per capita gain of 3.9% per year.
- o Reduce inflation.
- o Improve distribution of industrial development projects.
- o Increase education and research.
- o Carry out surveys of natural resources.
- o Move from a deficit position to a balance in foreign trade.

Very little of this plan was ever implemented because of the political situation existing at the time. The government wanted to take a very hard position on some of the programs and, as a result, they never were implemented by the corresponding agencies.

Plano de Ação Econômica do Governo (PAEG). Following the change in government which occurred on March 31, 1964, there was a period of transition and readjustment under President Castello Branco while many government agencies and institutions were redesigned. The PAEG had only three goals: (1) reduce inflation, (2) return to economic growth, and (3) correct the discrepancies in the regional development.

Of the three goals, the first was the one that was most effectively met; the other two were only partially accomplished, but as everyone knows, that was a difficult period as the new government adjusted and reoriented the nation.

Plano Decenal. Established by the administration of President Arthur da Costa e Silva, this was a comprehensive 10-year development plan for Brazil. The plan provided overall guidelines for government investments, the use of funds by the state and municipalities, and general indications to the private sector. The plan did establish norms for the use of natural resources, budgets, government controls, and others. It also gave projections for new infrastructure,

basic industries, and technology. In the social field, it defined goals for education, housing, administrative reforms, and other sectors.

Implementation of the short-term objectives came under the Programa Estrategico de Desenvolvimento (PED) for the period from 1968 to 1970. Some of the goals were:

- o Increase in GNP at the rate of 6% per year.
- o Higher employment.
- o Industrial growth on the basis of import substitutions.
- o Higher exports.
- o Agricultural growth of 5% to 6% yearly.
- o Control of deficit spending by government.

To gain these objectives, a series of subprograms were designed and came into effect during the two-year period. The program achieved modest success and served as a basis for other development programs that followed.

Programa de Metas e Bases. The Minister of Planning announced this program on October 1, 1970, on behalf of the administration of President Emilio Garrastazu Médici. The plan, it was announced, was not a global plan and would be followed by two other documents which would govern all phases of action for 1971-1973. The two additional documents were the Orçamento Plurianual de Investimentos (Investment Budget) and the I Plano Nacional de Desenvolvimento.

The program was a long-term plan to develop Brazil by the end of this century. The main actions suggested in order to reach said goal were the following:

- o Increase the production rate from the current 7% to 9% up to 10% per year.
- o Expand employment and create some 880,000 new jobs per year.
- o Control inflation and allow no more than 10% internal inflation.
- o Adjust the balance of payments in favor of Brazil and increase exports some 7% to 10% annually.
- o Distribute the gains reached through the development process to the mid- and low-income groups.
- o Correct the existing disequilibrium among the regions.

- o Continue the reforms in the economy, education, political arena, agriculture, and many other areas.

- o Achieve political stability and national security.

Four major objectives were established for the short term (1970-1973):

- o Revolutionize the educational system, giving it the highest priority, and increase the programs related to public health.

- o Revolutionize the agricultural process.

- o Stimulate rapid development of science and technology.

- o Increase the competitive power of the Brazilian industries.

I Plano Nacional de Desenvolvimento. The 1972-1974 development plan was the brainchild of Economist João Paulo dos Reis Velloso. The document states that this plan was the overview of what the nation had assigned itself as a basic task.^{1/}

The document listed two general objectives:

1. Maintain Brazil as one of the 10 nations in the world with the highest NGP (National Gross Product) and upgrade its classification from ninth to eighth.

2. Increase per capita income in 1974 to over \$500.

Ten actions to be carried out during the 1972-1974 period to assure gaining the above objectives were delineated. Briefly they were as follows:^{2/}

1. Through a process of competition, increase the productive levels and efficiency of the public and private sectors, integrating harmoniously both of these sectors as well as the regions being developed and the companies and employees.

2. Improve the position of national (government-owned) companies, so they will be more competitive and eliminate existing inequalities.

^{1/} Republica Federativa do Brasil, I Plano Nacional de Desenvolvimento (PND) 1972-74, Lei No. 5727 de 4 de Novembro de 1971, Oficinas do Serviço Grafico da Fundação IBGE, Guanabara, Brazil, 1971, p. 7, translated.

^{2/} Ibid., pp. 7-9.

3. Promote effective government throughout the administration, autarchy organizations, and others. The public sector will operate in a simple, modern and efficient manner.

4. Mobilize even more financial resources to assist in the formation of capital and the creation of solid private enterprises. Provide access to these funds by small and medium-scale industries, so they too may produce in a more effective manner.

5. Implement a national technology policy. This will assure rapid technology transfer to the nation and the eventual generation of Brazilian technology.

6. Promote utilization of human resources. Accompany this with educational programs in order to decrease by 2 million the number of persons who cannot read or write in the 15 to 35 years age group.

7. Provide large investment programs for steel mills, petrochemicals, transportation, naval construction, electrical power, and nuclear generation.

8. Include national integration as part of the development process.

9. Promote social equality as an assurance that all persons will participate in the development of their region. A series of rural integration programs are defined and added.

10. Implement a strategy for external economy. This refers to international trade and anticipates a 10% annual growth rate in Brazilian exports.

Table 32 briefly recapitulates some of the major goals.

Table 32
DIMENSIONS OF THE BRAZILIAN ECONOMY
I PND, 1972-1974

| <u>Global Magnitude</u> | <u>Units</u> | <u>1970</u> | <u>1974</u> | <u>Percent Increase</u> |
|--------------------------------|---------------|-------------|-------------|-------------------------|
| Gross National Product | million Cr | 222,857 | 314,581 | 41 |
| Population | 1,000 persons | 93,204 | 104,130 | 12 |
| Per Capita Income | cruzeiros | 2,391 | 3,021 | 26 |
| Industrial Product | million Cr | 53,384 | 78,160 | 46 |
| Gross Capital Investment | million Cr | 32,885 | 59,770 | 58 |
| Economically Active Population | 1,000 persons | 29,195 | 32,987 | 13 |

Source: Ibid., p. 16.

The I PND was successful in reaching practically all of the established goals and some were even exceeded as a result of a very aggressive national response to the plan.

II Plano Nacional de Desenvolvimento (PND). Following the success of the I PND, the II PND was established for the 1975-1979 period. This new plan goes beyond some of the goals that were originally established under the Plano Decenal (10-year plan) during the administration of President Costa e Silva. Among other goals are the following: (1) per capita income of over \$2,000 by 1979, (2) GNP of over 100 billion cruzeiros, (3) world rating of eighth largest in GNP, (4) foreign trade over 40 billion cruzeiros, and (5) employment of 1.7 million new persons.^{1/} Table 33 recapitulates the principal established national goals for the 1975-1979 period.

Table 33
PERSPECTIVE OF THE BRAZILIAN ECONOMY, 1979

| <u>Global Magnitude</u> | <u>Units</u> | <u>1974</u> | <u>1979</u> | <u>Percent Increase</u> |
|--------------------------------|---------------|-------------|-------------|-------------------------|
| Gross National Product (GNP) | billion Cr | 735 | 1,264 | 61 |
| Population | millions | 104.2 | 119.7 | 15 |
| GNP per Capita | US \$ | 74.2 | 1,044 | 40 |
| Gross Capital Investment | billion Cr | 196 | 316 | 61 |
| Industrial Product | billion Cr | 212 | 374 | 76 |
| Economically Active Population | millions | 32.9 | 38.0 | 16 |
| Industrial Employment | millions | 6.1 | 8.1 | 33 |
| Exports | billion US \$ | 8 | 30 | 150 |

Source: Ibid., p. 30.

In the area of industrial development, the II PND indicates the desire to establish new industrial centers, improve the quality of products, reduce costs, as well as control pollution. The plan calls for private development, with

^{1/} Republica Federativa do Brasil, II Plano Nacional de Desenvolvimento (PND) 1975-1979, Lei No. 6151 de 4 de Dezembro de 1974, Guanabara, Brazil, 1974, p. 16.

public development of certain industries. Among the basic industries, the nation plans to develop the following: siderurgy, nonferrous metals, petrochemicals, fertilizers, agricultural pesticides, paper and cellulose, raw materials for pharmaceutical products, cement, sulfur, and others.

Another priority area is technological development. The desire is to generate native technology and evolve from the constant purchase of technology, patents, and so forth.

Regional Plans

The different national plans always referred to regional integration, regional planning, and other region-oriented concepts. It is true that many agencies such as the Superintendência de Desenvolvimento do Nordeste (SUDENE) and Superintendência do Desenvolvimento da Região Sul (SUDESUL) carried out regional development programs, but it was not until March 1971 during the administration of Governor Colombo Machado Salles that a program was actively pursued for the development of Santa Catarina. This program was coordinated with the 1970-1973 development plan of President Médici.

The Projecto Catarinense de Desenvolvimento 1971, published by the state government, presented a large number of programs for the following years, mostly in the areas of public administration, health, education, human resources, investments, agriculture, and industry; but most of the industrial programs were oriented to the development of a carbo-chemical complex and the establishment of an industrial development council for the state. Among the programs, there was one to consolidate an existing educational institution and create an educational foundation. This plan was the beginning of what is today the Fundação Educacional do Sul de Santa Catarina (FESSC).

Over the past four years, FESSC has taken a leading position in the field of industrial development and regional development in the area of South Santa Catarina. Unfortunately, in 1974 the flood nearly destroyed the institution and greatly damaged a number of industries that were then being assisted by the FESSC staff.

As a result of extensive research over the past year, the FESSC staff has now prepared an in-depth regional development program for South Santa Catarina, with some very interesting industrial development projects. The chapter that follows presents in summary what is probably the most well-defined, researched,

and conceived development plan for South Santa Catarina. At this time, all the municipalities have endorsed the plan, and it is now being presented to both the state and national governments for implementation and funding.

PRESENT DEVELOPMENT PLAN FOR SOUTH SANTA CATARINA

The Department of Research and Development (DPD) of the Fundação Educacional do Sul de Santa Catarina (FESSC), assisted in part by the staff of the Economic Development Laboratory of the Engineering Experiment Station at the Georgia Institute of Technology, published in 1975 an in-depth study of South Santa Catarina.^{1/} Volume 4 of this five-volume publication presents an economic development plan for the area. This study has been endorsed by all the municipalities in the area, by the Superintendencia do Desenvolvimento da Região Sul (SUDESUL), and by the Ministerio do Interior. As a result of the great acceptance, the present governor of the state of Santa Catarina has included many of the recommended actions in his actual five-year economic development plan.

In the reference study, Mr. Müller and his research staff identified 39 isolated problem areas,^{2/} but only two major areas are highlighted in this report -- industry and small-scale industry, which are discussed together later in this chapter. A brief summary of some of the other problem areas is presented below.

General Problem Areas

In attempting to summarize the identified problem areas other than industry and small-scale industry, the cited study presents the following "bottle-necks" or problems:

1. Isolation. Because of its lack of infrastructure, the area is isolated from the west of the state and from the plateau region.
2. Population distribution. The population is concentrated in few centers and, consequently, the land use is very inefficient. The land area is not being used to its best advantage.
3. Lack of data. There is a lack of technical-scientific information in such subject areas as climate, geology, hydraulics, among others. There is a need for identification of resources.

1/ José Müller, Termos de Referencia, Fundação Educacional do Sul de Santa Catarina, Tubarão, S. C., Brazil, September 1975.

2/ Op. cit., pp. 334-338.

4. Floods. A large portion of the area suffers yearly floods which cause large financial losses to agriculture, industry, and commerce.

5. Mini-farming. The vast majority of the agricultural activity is "mini-farming," which, by its nature, is marginal.

6. Unused land. Because of the flooding, some 70,000 hectares (the most fertile land in the region) remain unused and will continue to be idle until appropriate measures are taken.

7. Tourism. The area has great potential for tourism, but due to lack of facilities, not many persons make use of the beaches, mountains, historical landmarks, and warm springs.

8. Airports. The few existing airports are within the population centers, causing traffic problems and noise pollution. In most cases, they are inadequate.

9. Ports. The port of Laguna is not in operation; the fishing port is not open; and the Imbituba port facilities have been dismantled. The region is lacking port facilities for the import and export of goods.

10. Power. The area produces 75% of the electric power generated in the state, but this is transmitted elsewhere and the region lacks electrical energy. The distribution system is deficient and the prices are very high.

11. Migration. A selective outmigration has been occurring over the years as the younger, more-educated persons go elsewhere looking for employment or a better way of life.

12. Planning. No comprehensive plan is in existence which addresses itself to the innumerable problems that have been identified in this region.

The above summary has not touched upon many other well-developed problems that were presented in the Termos de Referência, but these will suffice to bring to the reader's attention some of the basic limitations that are in existence.

Industry

The composition of the industry sector in South Santa Catarina indicates a stage of initial development. In terms of gross value of production, about 50% of the total is generated by the more traditional industries, while the more modern or dynamic industries produce under 14% of the total. In other

words, most of the industrial base of the area is related to mining and exporting of natural resources. In this respect, the industry sector of South Santa Catarina is limited and directly dependent upon the traditional mining activities.

In 1971-1972, the Fundação Educacional do Sul de Santa Catarina conducted an industrial census of that sector and determined that there were 2,376 industrial establishments employing 25,075 persons.^{1/} FESSC also reported that 34 mining companies employed 6,884 workers and 2,292 industries (all sizes) employed the balance of 18,191 persons.

The in-depth study of the area conducted by the FESSC research team and presently being used by the state government as a base document for the state economic development plan suggests expanding or establishing the following industrial activities:

Coal. The coal deposits of Santa Catarina are the largest in Brazil and the only ones usable for the production of coke. The steel industry is dependent to a large degree on this source of coke. The expansion of both mining and beneficiation activities is given a very high priority. Research is also recommended as means of bettering the production of coke from this known source.

Coal from the Barro Branco and Irapua deposits in Santa Catarina is lower in quality and more costly to extract than most of the present industrial coals in other nations. One main problem is that the coal seams are narrow, with shale partings, and the coal itself contains a fine, highly dispersed ash that is only partially removed by washing. According to a study conducted by the staff of the Battelle Memorial Institute, the local coking coal has between 17% and 18.5% ash.^{2/}

As part of the present economic development plan, the Industria Carbo-quimica Catarinense S. A. (ICC) is presently being constructed, and it will be conducting research in the area of coal beneficiation and coking technology. This very large industrial complex being built in Imbituba will eventually become a carbo-chemical complex for this area of the nation.

^{1/} DPD/FESSC Industrial Census, 1971-72, Fundação Educacional do Sul de Santa Catarina, Tubarão, Brazil, 1972.

^{2/} G. K. Manning et al. Summary Report on Production and Use of Santa Catarina Coal, Battelle Memorial Institute, Columbus, Ohio, July 31, 1968, Chapter VIII - 1.

Coal By-products. The ICC, once it is operational, also will produce sulfuric acid, phosphoric acid, mono-ammonia phosphate, and other products from the coal by-products. Studies have been conducted on the use of the pyrite resulting from the beneficiation of the existing coal in the production of fertilizer and other products.

Coal Gas. The plan also calls for research in the area of uses of coal gas. The ICC will study the use of this product as a source of energy and in other applications.

Other Minerals. The five-year plan will focus on the uses of other non-metallic minerals such as kaolin, fluorite, bauxite, and clays.

The economic expansion program also is oriented to augmenting the industrial production of existing installations, development of human resources, establishment of tourist attractions, to name a few. In general, the program for Santa Catarina follows the present II Plano Nacional de Desenvolvimento (PND) 1975-1979, and the objectives and goals are geared to the national needs. This is the first time that a clear program has been established for this area, and much credit for this achievement goes to the Fundação Educacional do Sul de Santa Catarina.

SMALL-SCALE INDUSTRY DEVELOPMENT PROGRAM

For the past 15 years, the Economic Development Laboratory (EDL) of the Engineering Experiment Station at the Georgia Institute of Technology has been working with other institutions and organizations in developing countries seeking solutions to pragmatic and relevant problems associated with the growth of small-scale industries. As a result of this interest, the EDL had identified a number of institutions interested in actively participating in a program which would stimulate the growth of small-scale industries. One such interested organization was the Fundação Educacional do Sul de Santa Catarina, and in March 1972 both institutions entered into an agreement which provided for cooperative programs, projects, and activities.

Since 1972, FESSC has been actively working in South Santa Catarina trying to develop the small-industry sector, generate employment, improve existing industrial enterprises, and develop new small-scale industries. The accomplishments in Santa Catarina through the FESSC program have been noted by state and federal authorities in Brazil and, at present, FESSC is a leader in that field in Santa Catarina. This section will highlight a few interesting industrial case histories that have resulted from the FESSC actions.

It is of interest to point out that FESSC is probably the only educational organization in Brazil fully dedicated to the concept of developing and stimulating small-scale industries. The area of influence of the FESSC is one of the lesser-developed areas of Brazil, and Santa Catarina has been a "Cinderella" in the overall Brazilian economic development, receiving little or no assistance until now.

Considering the fact that FESSC is a "new" organization with limited financial resources, small staff, and a large geographic area to serve, the results to date have been impressive and well recognized by the Brazilian authorities.

Fundação Educacional do Sul de Santa Catarina (FESSC)

The Fundação Educacional do Sul de Santa Catarina is an institution of higher learning operating as an educational foundation in the city of Tubarão, Santa Catarina State, Brazil. FESSC is an autonomous organization established under the civil code and legislation, under special decree and Laws 200 and 900.

FESSC was established by Municipal Law No. 443/67 of October 18, 1967, and its bylaws define the following objectives:

1. Create, integrate, organize, and maintain schools of higher and medium level of professional quality, as established by the needs of the labor market of the region, state, and country.

2. Carry out course programs, training, and specialization for graduates and special courses for post-graduates.

3. Promote, study, and research in relation to the economic development and social development of the region and state alone, or with the assistance, or in cooperation with private and public entities.

4. Promote conferences, debates, and seminars as a dissemination of studies related to economic problems in general or specifically of the region of South Santa Catarina.

5. Adopt, as needed, the necessary organization to implement the future University of South Santa Catarina.

The Council of Curators is made up of representatives of the entities that support and created the organization. Its Executive Secretary is the representative of FESSC, at present the President of the Executive Directory of the Foundation, Dr. Osvaldo dela Giustina.

The Executive Directory of FESSC is composed of its President (the Executive Secretary of the Curator Council) and the Directors of the Department of Higher Education, the Department of Secondary Education, and the Department of Research and Development. There is also an Educational and Technical Advisory Council to the Directory.

The support organization to the administration includes a Secretary General, Associate Director, Administrative Assistant, and assistants in teaching and planning.

The Higher Education Department coordinates the schools and institutes and course work at that level carried out by FESSC. In December 1975, the Higher Education Department had a faculty of economic sciences, course work in economics, and was establishing courses in accounting sciences and administration.

The School of Advanced Sciences and Teaching offers courses in teaching (teachers, administration of school, educational orientation, and teaching

orientation), languages (Portuguese, English, and French), and social studies (geography and history), and is now establishing a course in philosophy, civics, and ethics and course work for professors in the areas of professional techniques.

The Department of Secondary Education is made up of the Integrated School Father Dehon and a small experimental school.

The Research and Development Department has a center or institute to provide technical assistance, research, planning, and information oriented to local development and regional development of private enterprises, communities, municipalities, and other public sectors, as well as the private and civic community. Figure 2 presents the organizational structure of FESSC.

Many small-scale industries have benefited from the actions and services provided by FESSC over the past three years. Five of these cases will be summarized at this time as examples of what can be done by a small group of dedicated professionals.

CASE 1 - ESMALTADOS CATARINENSE LTDA., São José, Município de Braço do Norte, S. C.

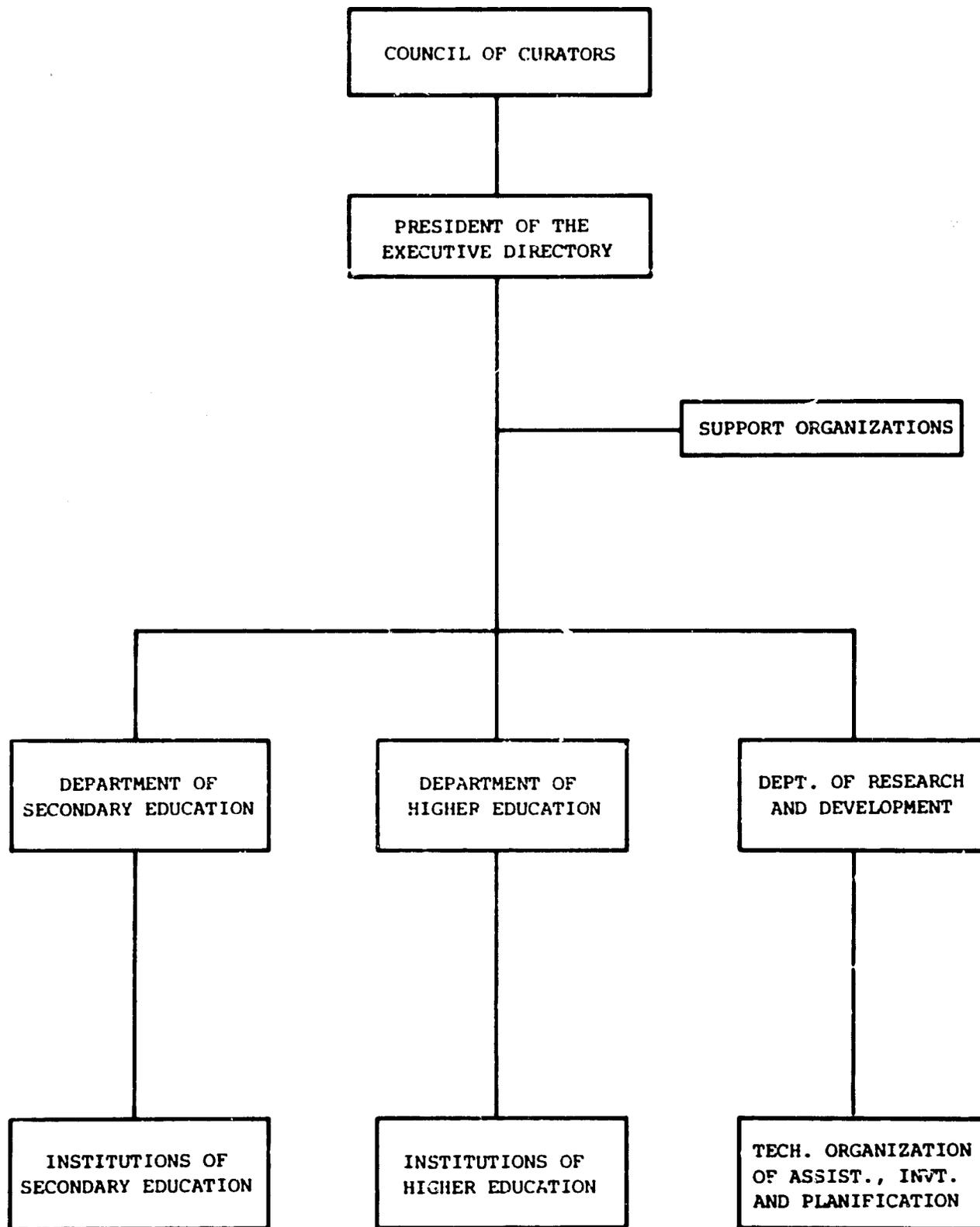
This small, family-owned business manufactures and sells baked-on porcelain enamel items, such as parts for gas cooking stoves, street signs, name plates, house numbers, and similar items.

Background

The company originally was established in the city of Orleans in 1970 by a manufacturer's representative who became associated with a small group of investors in that city. The plant was designed to use electric power generated by a local company. After a few months of operation, it became evident that the cost of the electric power was far higher than the manufacturing process could afford and the industry was stagnant for a period of time.

In 1973, the company was on the verge of bankruptcy and was reorganized. The company changed hands and became the property of Mrs. Nilza Casques and her brother, who is an engineer and is not active in the business. Mrs. Casques and her husband, Mr. Ivan Casques, then became the managers and operators of the industry.

Figure 2
ORGANIZATIONAL STRUCTURE OF THE
FUNDAÇÃO EDUCACIONAL DO SUL DE SANTA CATARINA
(January 1976)



As part of the rehabilitation of the company, the new owners purchased a 4,000-square meter site and building in the city of São José and relocated the plant. The newly purchased building had in it a 100-HP hydraulic turbine which moved a 125-KVA generator, which had until then been in operation generating electric power to a small manioc flour mill. With the acquisition of the electric power generator, the power costs were greatly reduced and, once again, the manufacturing process became economically feasible.

The plant started operating at the new location, employing five or six workers. Production was sporadic, sales were limited, and rejects or returns by buyers were as high as 50% of production. The plant manager, Mr. I. Casques, is a self-taught man with mechanical ability and a sincere dedication to the company.

In March 1974, the plant was practically destroyed by the catastrophic flood of that year. Following the flood, the FESSC team started providing technical assistance to the industry in an attempt to get it back into operation.

Technical Assistance

The FESSC team evaluated the flood damages, established a schedule for getting the plant back into operation, prepared a new plant layout, and conducted a complete in-depth study of the industry in an attempt to improve it, if possible. Following are the principal findings:

- o The study indicated that the production process was poor and that more than 50% of the produced units were unacceptable. The lack of administrative know-how was also damaging the day-to-day operation and general financial position of the company.

- o The hydraulic-powered electric generator was far below generating capacity and causing unexpected stoppages in the plant.

- o Incoming metal plates must go through a cleaning and pickling operation. The plates are immersed in dilute sulfuric acid, but on-site observation indicated that the solution was too diluted (below 10%), the bath was too brief, and the temperature of the liquid was too low.

- o In the enameling process, it was determined that the spray guns were not operating properly, the air was full of dirt particles, and the enamel was poorly mixed.

o In the drying of the enamel coat, it was determined that since this was done anywhere in the area of the building, dust particles were covering the enamel surface during the drying period.

Implemented Actions

o The new plant layout was accepted and implemented during the rebuilding of the plant following the flood.

o The power generator was regulated, small adjustments were made to the equipment, and generating capacity was increased.

o Management agreed to hire a local accountant on a part-time basis to assist in keeping company books, records, and other financial matters.

o The cleaning and pickling operation was modified. A simple control system now provides routine checking of dilution of sulfuric acid bath, temperature of liquid, and immersion time.

o Enamel spray booths were made and isolated to assure a cleaner environment. A simple check system was designed to assure the enamel solution is properly mixed and homogeneous.

o The drying area was isolated, small air extractors were installed, and in general, the operation was improved.

o A homemade timer was installed to assure that the enamel pieces remained in the kiln the proper length of time, as well as a "rough" temperature control device.

o Market research was conducted for these products in the three adjacent states.

Results

o Power generation has been increased by 10%.

o Product acceptance has been increased and the plant now serves a larger market as identified by the market study.

o Production has improved greatly and, at present, rejects are running under 10%.

o Due to larger demand, the plant has hired five more persons. Total employment is now 10 persons, full-time, no less than five days per week.

o A new product line (electric outlet boxes) has been established and is also proving to be successful.

o Total plant output has increased in one year from 150 tons annually to 200 tons per year by the end of 1975.

o Owner-manager reports a total overall plant production "increase of 300%" on the basis of fewer rejects and more production.

CASE 2 - ZOMER INDUSTRIA DE PLASTICOS LTDA., Orleans, Municipio de Orleans, S. C.

Three brothers own and operate this small-scale industry, which produces plastic bags from polyethylene. The bags are printed (up to four colors) with the buyer's logo. The three brothers form the management team; one is a person with industrial experience and is responsible for the plant operation, and the other two are, respectively, an economist and an accountant. The Zomer family has a tradition of being entrepreneurs and industrialists in that city.

Background

When established in 1973, the company went in business manufacturing plastic (PVC) tubing and small-diameter hoses. The original operation met with some success and later the owners decided to change their product line and start manufacturing plastic bags.

A consultant company from Florianópolis was contracted to carry out a feasibility study for the new product and to prepare the necessary documentation to obtain a bank loan on behalf of the company. The feasibility study was completed, the loan application was presented to the Banco do Brasil S. A., but the bank turned down the loan application.

Management of the company then requested assistance from the Fundação Educacional do Sul de Santa Catarina and entered the small-scale industry development program. Appropriate modifications were made by FESSC team to the feasibility study and loan application and it was again presented to the Banco do Brasil S. A., which accepted the application and granted the loan.

Construction for the new plant was under way, equipment had been delivered and was scheduled for installation when the 1974 flood occurred. The incomplete plant suffered some damages, but the production equipment was free from damage. The company started manufacturing its new line of plastic bags in 1975, after several months of delay caused by the flood.

Technical Assistance

o The FESSC team modified the feasibility study and loan application as per the Banco de Brasil requirements and assisted the company in obtaining the loan.

o Shortly after the flood, the FESSC staff, assisted by an on-site EDL staff member, updated the plant layout and production flow charts, and many other production techniques were suggested or reviewed.

o Once operations started, a system was designed and established to provide unit cost control, safety schedule, administrative controls, inventory, bookkeeping, and many other controls.

o Assistance also was provided in achieving a higher volume of production to keep the unit cost competitive with other national manufacturers.

o A market survey was conducted which identified new market areas for the company's product, as well as indicating the market control which the four known competitors have.

o Policies were established for personnel, credit, sales, salesmen, purchases, and other areas.

Implemented Actions

The owners have implemented nearly all of the recommendations made by the FESSC staff.

o The original plant layout was modified to allow for a second production line in the event the company should be expanded as indicated by the feasibility study. At present, the owners are considering setting up a second line in accordance with the revised study.

o All administrative recommendations have been implemented.

o The recommended credit policy and sales policy are in effect and are being used with very good results.

o Production changes have been implemented, reducing the number of bag sizes to a more standard selection. This has greatly increased production and lowered operating costs.

o The Banco do Brasil is satisfied with the operation of the company and the repayment schedule is being met promptly.

Results

- o For the first full year of operation, the company had total sales of 648,530 cruzeiros and reported profits after taxes of 106,927 cruzeiros.
- o Twenty-five persons are presently employed by the company, as compared with only five when started in 1973.
- o A plant expansion is now being considered by the owners and the appropriate study is being conducted by the FESSC team.
- o This small-scale industry is a well-operated, modern establishment manufacturing a product that is very well accepted.

CASE 3 - INCOMAL--INDUSTRIA E COMERCIO DE MADEIRAS LTDA., Mirim, Municipio de Imituba, S. C.

As part of the "new manufacturing opportunities" phase of the small-scale industry development program conducted by FESSC, this industrial activity was researched, studied, designed, and implemented during a 12-month period.

Background

The very large industrial complex being built by the Industria Carboquimica Catarinense S. A. (ICC) at Imituba will generate a large number of industrial jobs and demands for innumerable goods.

The Federal Decree Law No. 86 has limited the exportation of "raw" timber and there is a demand for processed wood products, many of which, to date, have been imported.

Two local persons with some funds contacted FESSC seeking advice on good potential manufacturing opportunities. One of the two interested persons had been a sales representative for a large lumber mill for 15 years and has good contacts in the construction sector. The other was, for a number of years, the assistant manager of a large construction company. The two investors not only had some funds available, but also had control of or access to a large stand of timber.

Technical Assistance

- o Preliminary research indicated that a good manufacturing opportunity in the area of Imituba would be the processing of timber into dimension stock for the construction industry and for the manufacturing of truck bodies.

o A complete market research study was then conducted by the FESSC technical staff. The study indicated a very good market for the selected products.

o Assisted by an on-site EDL staff member, FESSC was able to develop a complete feasibility study for the manufacturing of dimension stock. The study included equipment required, process flow, manufacturing flow, plant layout, and all financial studies, together with market-sales projections. The study was later published under the title of Incomal--Industria e Comercio de Madeiras Ltda. by the FESSC staff.

o Together with the interested persons, a plant location was determined. Preliminary arrangements were made with the owner of the selected location.

o The final study, together with the appropriate loan application documents, was presented to a local bank. The Fundação de Desenvolvimento Econômico de Santa Catarina (FUNDESC) guaranteed the loan and the bank made available 1 million cruzeiros (about \$125,000).

o Construction was initiated, equipment purchased, and technical assistance was made available throughout the start-up phase.

Implemented Actions

o The company has been formed, the loan has been provided and the project for the new manufacturing activity has been implemented.

o Nearly all the recommendations in reference to plant layout, equipment purchases, operation of the company, sales policies, and other items have been implemented.

o The FESSC team has worked with the interested persons from concept to reality in developing a new industrial enterprise and training the plant staff.

Results

o The plant is in operation, producing at the rate of 5,000 cubic meters of dimension stock per year.

o As a result of the manufacturing opportunity study: over 2 million cruzeiros have been invested in land, construction, equipment, and other needs of the new small-scale industry.

o This new enterprise has employed 47 persons, of whom 40 are plant staff and seven are in sales and administration. The staff was trained under another

FESSC project for human resources. The total plant payroll is over 580,000 cruzeiros per year (about \$70,000).

o Raw material purchases (timber) at the initial production rate will represent some 2.5 million cruzeiros per year (about \$310,000), which will revert to the timber producers in the immediate area of the plant.

o On the basis of the original study and updates, after the first few months of operation, the company will pay some 700,000 cruzeiros in taxes (about \$85,000) to the federal, state, and municipal governments.

o Present financial reports indicate plant sales will be on the order of 5.5 million cruzeiros (about \$687,000) for the first year of operation at 80% capacity. If sales and production costs remain as projected, the owners will show a gross profit of about 1 million cruzeiros at the end of the first year.

CASE 4 - GINO ACESSÓRIOS LTDA., Tubarão, Município de Tubarão, S. C.

This very small industry, established about 12 months ago, manufactures assorted sizes of automobile mats. The original concept called for plastic or rubber floor mats for automobiles, but later this was changed to the present textile or rug-type mats.

Background

Two sales persons and one industrialist teamed up to go into business but did not define the manufacturing activity they wished to initiate. After a series of contacts with other economic development agencies and organizations, the investors presented their inquiry to FESSC.

Previous studies conducted by FESSC to identify new small-scale industry opportunities indicated that automotive accessories could be a desirable activity. Additional research further identified the manufacturing of automotive floor mats as a low initial investment opportunity with a good potential market. At first, it was considered that rubber or plastic mats would be the production item.

The three investors decided to go into business to manufacture car mats, but also contacted FESSC for assistance in establishing the operation.

Technical Assistance

o The investors had selected car mats on the basis of an original FESSC study identifying this product as a desirable new manufacturing opportunity.

The FESSC team now expanded the research into this concept and concluded that neither rubber nor plastic mats were viable because of the high cost of the equipment. The FESSC team recommended that they manufacture textile mats, using scraps from rug manufacturers.

- o A complete feasibility study for this type of manufacturing process was conducted by the technical assistance group at FESSC.

- o Early in 1975, with assistance by the FESSC team, a small plant was put into operation, employing three persons.

- o Once in operation, the plant management proved to be in need of technical assistance in the management area and this was provided by the technical assistance group.

- o During an on-site tour of an EDL staff member, this new plant was visited. The EDL engineer determined that the cutting operation needed modification. Appropriate recommendations were made in regard to the cutting process, adequate tools, and procedures. The cutting operation was modified to fit the production needs.

- o New administrative, accounting, and sales systems were recommended to the management of the new industry.

- o Production costs were established and, on the basis of the unit cost, the sales prices and salesmen's commissions were adjusted.

Implemented Actions

- o The investors implemented the basic recommendation of not manufacturing plastic or rubber mats and going into the production of textile mats.

- o Most of the original plant layout suggested by the EDL/FESSC team was followed, with slight modifications to meet given requirements.

- o All of the administrative, personnel, sales, and operational procedures have been used by management in setting up the company.

- o Once unit costs were established, the sales policy was adjusted, resulting in the establishment of more sales outlets.

- o Basic quality control procedures were established as per recommendations made by the FESSC/EDL team.

Results

- o A new small-scale industry has been established in the area producing automotive floor mats.
- o Due to the many adjustments made to the original study, the investors were able to finance the operation using their own financial resources.
- o The company started out employing three persons and now has five employees after only 12 months of operations.
- o Since the cutting process was modified, the plant production has been augmented 60%. A new sewing machine has been purchased, and once this is put into the production line, another 10% to 20% increase is anticipated in the production.
- o The industrial activity has proved to be viable and the investors will show a small profit at the end of the first year of operation.
- o Most of the raw materials used are waste, seconds, or by-products of other small industries.

CASE 5 - METALURGICA SOUZA LTDA., Tubarão, Município de Tubarão, S. A.

The company is engaged in manufacturing machinery and equipment. Two main lines are considered principal products -- a brickmaking machine, or pug mill, and selected farm machinery. At times, special machinery may be designed or fabricated and parts for heavy machinery in use in the area are also made or ordered to repair and maintain existing equipment.

Background

The company was funded in 1964 by two brothers, using the name of Irmãos Souza Ltda. For about 10 years, the company prepared, overhauled, and maintained farm machinery. It was a repair shop and not a manufacturing enterprise.

The two brothers have technical backgrounds and great experience in welding, metal fabrication, and general machine shop work. The owners-managers have always attempted to handle the administrative, financial, and accounting functions of the company, but these have been the weak areas of the business.

o In general, the company was doing well and the partners started designing and fabricating a prototype pug mill for possible production. The prototype was being tested when the 1974 flood nearly destroyed the plant. Assistance was

requested from the FESSC, following the flood, to rehabilitate the company and salvage the enterprise, if possible.

Technical Assistance

o Limited assistance was given at first in salvaging, reconstructing, and repairing the existing equipment in the machine shop. The company staff had the necessary know-how; consequently, assistance provided by FESSC was in obtaining required parts and locating the manufacturing representatives for the different machines.

o After consultation with company owners, it was recommended that a "new" building be put up to house the company, using a salvageable part of the old structure. The location was retained, as it was well situated and belonged to the company.

o A new plant layout was designed to fit the new building under construction and to adjust to the manufacturing of the new product (pug mills).

o Once the feasibility study was completed -- plant design, layout, and other details -- the loan documents were drawn and presented to the Banco do Brasil S. A. The bank approved a 90,000 cruzeiros loan for the new plant building.

o The plant resumed operation, but continued having the inherent management weakness. Through FESSC's suggestions, this was remedied, an accountant was hired, and some administrative procedures were established.

o The loan was paid up ahead of schedule and new financing was obtained for much-needed plant equipment to replace damaged machines and to provide the required manufacturing tools for the new product line.

o A market network was designed to provide for manufacturing representatives to sell the pug-mill line as well as the other company products.

o Assistance was given in developing a company product catalog, price list, parts lists, and other sales tools.

o A study was completed with the assistance of the EDL on-site staff through which it was proven that the company needed to have its own casting facilities for specialty parts required in the process.

Implemented Actions

- o The new plant was built and the layout closely followed the original design.
- o Most of the administrative-management recommendations have been implemented.
- o The loan was paid and new equipment purchased using a new credit line.
- o Diversification is slowly being established. The company is now looking at manufacturing of conveyors and simple material-handling devices.
- o A foundry shop has been established and is now operational.
- o A sales organization has been initiated. Catalogs, price lists, and parts lists have been published and distributed.

Results

- o Metalurgica Souza is now successfully manufacturing two models of pug mills at the rate of about 10 per month.
- o The company was rehabilitated following the flood and present installations are by far better than the original plant.
- o Employment is now up to 21 persons and additional staff will be required in the very near future.
- o Cash flow is healthy and all financial commitments are being met on time.
- o A new product line (simple material-handling devices) is now being considered for future expansion.
- o The foundry is operating successfully and, as a result, better quality control is being kept.

CONCLUSIONS AND RECOMMENDATIONS

In a wandering manner, the author has attempted to evaluate the Brazilian small-scale industry sector. This approach is indicative of the fact that viable, reliable, current information is scanty on this particular subject. As part of this case history, the author has reviewed (1) the general background of the nation and the selected state, (2) the historical strategies and plans employed over the years, (3) a summary of the next five-year economic development plan, and (4) selected small-scale industry technical assistance cases serviced by an EDL counterpart organization in Brazil.

One thing is evident: In spite of all the information generated from the various on-site sources, the author is unable to quantify the true role of small-scale industry in Brazil. There is no doubt that this sector has a predominant role in the generation of goods and products, as well as in the total employment figure, but the definitions of small-scale industry are such that it is nearly impossible to isolate them from the general industrial statistics that are available.

Some very important facts are generally known, but they are not quantifiable; as an example, the researcher knows that the small-medium industry sector of Brazil is employing a huge number of persons (about 63%), that this is a desirable social factor, that this sector probably produces over 55% of the value added by manufacture, and so forth, but the data are not available to allow the researcher to positively quantify the statements. From the isolated case histories of a selected number of industrial activities, the data indicate that with appropriate assistance, these companies increase production, hire more staff, augment sales, and in general develop from small-scale industries into medium-size industries. There is an apparent interaction in Brazil between small-scale industries and larger plants; the smaller enterprises are fulfilling the role of substitution or of provision of subassemblies of products required by the larger establishments.

It is also a fact that starting in 1951, the administration of President Eurico Dutra became interested in the economic development of Brazil and initiated programs to meet this objective. The basic goal has been to develop the industrial and agricultural sectors, assist labor-intensive enterprises, acquire native technology, and in general, develop the entrepreneurs and their know-how.

As shown in the previous chapters, not all of these programs have been successful; however, the present government has identified with the problem and has initiated a five-year program which focuses mainly on economic development. Until the end of this decade, the present plan will undertake to continue the impetus which the revolution initiated in 1964. Brazil will continue in its programs focused on closing the frontier area between underdevelopment and development.

The fourth Government of the Revolution has set for itself some very major landmarks in the economic development field. The goal for 1979 is a national per capita income over the \$2,000 level. If one looks back at the available data, this means that in 10 years Brazil will have doubled its national per capita income; in view of this, one must recall that in the decade of the 60's only a 30% increase was obtained. Next, by 1979, the plan calls for a Gross National Product of over \$100 billion, which again is a great increase. In the five years of the plan, some 1.7 million jobs will be required to gainfully employ the then existing labor force.

The national plans reviewed by this document are considered by the author to be a macro type and, unfortunately, in most cases, there are no micro plans designed to support the overall program goals. The author has no doubt that the present five-year program is well conceived from an economist's point of view and from a national policy level, but there continues to be, in his opinion, a lack of detailed support planning at the regional, state, and municipal level.

One such regional or state approach to planning the economic development of the area is the in-depth study prepared by FESSC and published under the title of Termos de Referência, which is at present being used by the government of the state of Santa Catarina as a guideline for the development of their five-year economic development plan.

In considering this type of approach, one must admit that once the industrial priorities are established and the target groups of industries are selected, the strategy needs to specify activities concerning the realization of the strategy. If the plan is for the development of small-scale industries, two activities must be considered: (1) direct assistance and (2) indirect assistance. This approach has been used by organizations such as EDL for a

number of years, and it recently was presented as the subject of a paper by Mr. Hans Kristensen.^{1/}

Direct assistance is usually aimed at a few selected enterprises and consists of the provision of grants, low-interest loans, technical and management consultancy, special types of training programs, or free tools and equipment. In other words, it is a minimal type of service for very well-defined needs.

Indirect assistance involves helping the whole small-scale industry sector through the basic improvement of the infrastructure and the industrial climate. In this approach, the end result may be government protective measures, granting of priority to small producers in reference to government orders, improvement of trade channels, regular supplies of needed inputs (raw materials, parts, and equipment), better education, and other measures.

FESSC is, to the author's knowledge, the only organization in Brazil that is trying to provide both types of assistance to the small-scale industries in its area of influence. Currently, assisted by the Agency for International Development through the Georgia Institute of Technology, this organization is providing direct assistance to local industries in the manner illustrated in the five cases reviewed by this case history.

More such organizations should be established at the state and regional level in Brazil to assist in reaching the projected goals for the year 1979.

The author firmly believes that such programs of assistance to small-scale industries are not developed overnight. They usually tend to start as small efforts (such as FESSC) which, if successful, grow and multiply with time and great amount of effort. Experience in the development field has shown the author that such efforts must rely to a great extent on multiple sources of support, together with a continuous broadening of staff capabilities and activities.

The developing areas of Brazil should consider programs of small-scale industry development similar to the one being implemented by FESSC. As an illustration, the following program of work for a developing regional organization is presented.

^{1/} Hans Kristensen, The Technology Problem in Rural Small-Scale Industries, Organisation for Economic Co-operation and Development, Paris, September 1974, p. 6.

1. Regional Development Organization (RDO) Functional Activities

- a. Organization. The RDO will administratively designate a unit to mount a program of research, service, training, and technical information for the small industry sector. RDO personnel will design the program based on the organization goals and motivations.
- b. Facilities and Staff. The RDO will provide adequate office, equipment, and other resources to the designated unit to permit its staff to function effectively. Staff personnel who have appropriate backgrounds and who, with appropriate training, can implement the program of assistance will be assigned to the unit.
- c. Technology Transfer. An information collection will be established by the RDO where it does not exist to permit the staff to conduct research on industrial problems, needs, processes, and products, especially as they relate to small-scale industry, and to disseminate technical information.
- d. Delivery System. The RDO will design and implement a procedure to permit direct contact with small industries and entrepreneurs for the purpose of ascertaining their needs and problems and for the provision of staff assistance and research in the solution of problems, both management and technical in nature. This industrial extension activity will have as its aim the expansion and diversification of existing and new industry.
- e. Education and Training. The RDO will design and deliver appropriate training programs related to small-scale industry. Educational programs related to industrialization will be encouraged.

2. Substantive RDO Activities

For illustrative purposes, the following list represents specific types of activities which the RDO may engage in (as appropriate) to stimulate the development and growth of small-scale industries.

Research Activities

Preparation of case histories

Applied research on employment generation approaches

Evaluation of alternative methodologies aimed at accelerating industrialization and employment

Relationship of infrastructure development to industrialization

Economic planning strategies and alternatives

Analysis, evaluation, and development of new industrialization techniques and principles, products, and processes

Identification of appropriate manufacturing opportunities

Import substitution analyses and procedures

Export development considerations and potentials

Investigations of natural resource potentials

Production of market analysis and feasibility studies

Financing studies of small-scale industry

Industrial Extension Activities

Surveys of small industry problems and needs

Industrial problem solving

Advice and consultation with industry

Provision of technical information to industry

Provision of management assistance to industry

Training Activities (Short Course for Industrialists)

Small industry operations

Industry-community interaction

Specific small-scale industry subjects

Problems and needs of small industry

Industrial processes

Identification of manufacturing needs

Market analysis

Feasibility studies

Plant location factors

Entrepreneur development

Financing of small-scale industry

Educational Activities (If the RDO is an educational unit)

Design and presentation of small industry-related courses

3. Training and Consultation by Other Agencies

Training and consultation by foreign technical assistance organizations will be provided to RDO staff personnel both on-site in the development country

and abroad. This training and consultation will relate to all of the major activities contemplated by the RDO outlined above.

Assistance and consultation will be provided as part of this training to the RDO in the organization and staffing of the unit, the development of the information collection, the technology transfer process, and in the problem-solving analysis and delivery system.

The training will take various forms as appropriate, including classroom work, on-the-job training, consulting and advising, plant tours, contacts with technical information sources, the provision of technological information, etc., both in the developing country and abroad.

Anticipated Results

The activities conducted under this program would result in the establishment of units in developing regions specifically interested in the generation and expansion of small-scale industry. These units would generate action-oriented pragmatic programs of research, service, technology transfer, and training. Over a period of time, results would include the expansion of existing companies, the creation of new small-scale enterprises and the generation of new jobs with beneficial effects on income levels. Much of this work would be carried out in relatively rural areas, with resulting benefits to these generally low-income environments.

Great progress has been made in Brazil when the present is compared to 1951, but the small-scale industries continue to be in need of help. The economy of Brazil is changing, thanks in part to the million of dollars being generated through exports. Hopefully, advantage will be taken by the person in government of this momentum to build up the industrial middle class of the nation or the so-called small-scale industries.

The author is certain that none of the suggestions or comments offered here would by itself make a great contribution toward the desired development goal of Brazil. However, he firmly believes that a well-planned, wide-ranging government effort, coupled with some foreign assistance, would reach the small-scale industries favorably and in such manner develop them to the point where they could generate an impressive national contribution.

Appendix
PERSONS AND ORGANIZATIONS OR ESTABLISHMENTS
INTERVIEWED BY NELSON C. WALL
BRAZIL, 1975

PERSONS AND ORGANIZATIONS OR ESTABLISHMENTS
INTERVIEWED BY NELSON C. WALL, BRAZIL, 1975

Associação dos Municípios do Sul do Estado de Santa Catarina (AMSESC)

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| Dr. Algemiro Manique Barreto | Presidente |
| Sr. Lino Jovelino Costa | 1º Vice Presidente |
| Sr. Plinio Bonassa | Conselho Fiscal |
| Sr. Garibaldi P. Pinto | Conselho Fiscal |
| Sr. Romeu Carlessi | Conselho Fiscal |

Prefeitos Municipais de AMSESC

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|------------------------------|-----------------------------|
| Sr. Lino Jovelino Costa | Prefeito de Araranguá |
| Dr. Algemiro Manique Barreto | Prefeito de Criciúma |
| Sr. José A. Dal'Toê | Prefeito de Içara |
| Sr. Mario Gomes Collares | Prefeito de Jacinto Machado |
| Sr. Argemiro Raulino Mendes | Prefeito de Lauro Müller |
| Sr. Nivaldo J. Rosa | Prefeito de Maracajá |
| Sr. Venecio Zanette | Prefeito de Meleiro |
| Sr. Antenor Sartor | Prefeito de Morro da Fumaça |
| Sr. Alfredo Bortoluzzi | Prefeito de Nova Veneza |
| Sr. Quintiliano J. Pacheco | Prefeito de São João do Sul |
| Sr. Plinio Bonassa | Prefeito de Siderópolis |
| Sr. Arlindo Cunna | Prefeito de Sombrio |
| Sr. Liduino Dal-Pont | Prefeito de Timbê do Sul |
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| Sr. Altair Goirdani | Prefeito de Urussanga |

Associação dos Municípios da Região de Laguna (AMUREL)

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| Dr. Francisco Zomer | Presidente |
| Sr. Henio B. da Costa Bez | 1º Vice Presidente |
| Sr. Francisco E. Zobot | Conselho Fiscal |
| Sr. Irmoto J. Feuerschuetz | Conselho Fiscal |
| Sr. Eduardo Elias | Conselho Fiscal |

Prefeitos Municipais de AMUREL

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| Sr. Lady Fornazza | Prefeito de Braço do Norte |

Sr. Henio B. da Costa Bez
Sr. João de Oliveira Souza
Sr. Portinho Bittencourt
Sr. Eduardo Elias
Sr. José Joao Silvano
Sr. Francisco de A. Soares
Sr. Francisco Zomer
Sr. Francisco E. Zobot
Sr. Alcysio Willemann
Sr. Raulino de Pieri
Sr. João Lemonje
Sr. José F. Schmidt
Sr. Nilson S. Nandi
Sr. Irmoto J. Feuerschuette

Government of Santa Catarina

Dr. A. Konder Reis
Dr. Paulo A. Freitas Melro
Dr. Sebastião Netto Campos
Dr. Fernando Bastos D'Avila
Dr. Batista Pereira
Dr. Zany Gonzaga
Dra. Edith D'Aquino Silveira
Dr. O. dela Giustino

Fundação Getulio Vargas

Dr. Petrus M. Vlasman

Tubarão

Eco. Fawzi E. Mashni
Sr. Z. Damiani
Sr. I. Lima
Sr. A. Souza
Dr. L. Bairo
Dr. A. Bez

Prefeito de Gravatal
Prefeito de Grão Pará
Prefeito de Imaruí
Prefeito de Imbituba
Prefeito de Jaguaruna
Prefeito de Laguna
Prefeito de Orleans
Prefeito de Pedras Grandes
Prefeito de Rio Fortuna
Prefeito de São Ludgero
Prefeito de São Martinho
Prefeito de Santa Rosa de Lima
Prefeito de Treze de Maio
Prefeito de Tubarão

Governador do Estado
Superintendente da SUDESUL
Secretario da Industria e Comercio
de Estado
Secretario do Trabalho e Promoção
Social do Estado
Secretario de Tecnologia e Meio
Ambiente do Estado
Secretario de Interior e Justiça do
Estado
Ministerio da Fazenda
Fundação Catarinense do Trabalho

Departamento de Pesquisa

Fair S. A.
Lacticinos Tubaronense, S. A.
Izaltino P. Lima
Matalurgica Souza Ltda.
Banco do Brazil
Caixa Economica Federal

Sr. R. J. Ghisi
Sr. Nelson Maximo

Braço do Norte

Sr. N. Philippi
Sr. I. Casças

Orleans

Dr. A. Zomer
Sr. E. Zomer
Sr. S. Zomer
Sr. L. Fellsbino

Treze de Maio

Sr. N. Ghisi
Sr. L. Preve

Criciuna

Sr. Fidelis Barato
Dr. Waimir Wasniewski

Fundação Educacional do Sul de Santa Catarina

José Müller
Aloysio Ivo Urn:
Alberto May
Antônio Carlos Silveira
Blásio Schlickmann
Gerson Joner da Silveira
Heitor O. Silveira
José Albano Volkmer
Nilsa Demetrio
Seiro Moore
Adamir Mürnberg
Ademar José Faber
Ailton Nazareno Soares
Augusto César Zeferino
Augusto Primo Portugal

Gino Acessorios Ltda.
Electro Industria Catarinense

Nicodemos Philippi & Cia.
Esmaltados Catarinense

Plasticos Zomer Ltda.
Zomer & Cia. Ltda.
Estofados Zomer Ltda.
Granja Suely

Agroindustria Ghisi & Cia.
Industria Preve & Cia.

Cia. Carbonifera Catarinense
Escola Tecnica General Oswaldo
Vega

Economista
Economista
Engenheiro
Médico
Eng° Agrônomo
Advogado
Eng° Químico
Urbanista
Assist. Social
Urbanista
Lic. Filosofia
Economista
Economista
Geógrafo
Urbanista

| | |
|-------------------------------|---------------------------|
| Cadir Cargnin | Economista |
| Cecília Larrcoid | Economista |
| Elly Ribeiro Nunes | Sociólogo |
| Humberto Dalsasso | Economista |
| João Jerônimo de Medeiros | Economista |
| José Cláudio Goetze | Engenheiro |
| José Paulo W. Moraes | Economista |
| Jovino Armando Dutra | Economista |
| Loyde Bonot Müller | Professora |
| Marcos T. Hemkemeier | Economista |
| Maria Joni Maiochi | Antropóloga Social |
| Maria Zélia Teixeira de Souza | Professora |
| Névio Capeller | Lic. Filos. e Pedag. |
| Paulo Fernandes Sotêro | Economista |
| Rafael Eurides Jabuonski | Eng ^o Agrônomo |
| Reinaldo Di Bernardi | Geógrafo |
| Romelândia Silvestre | Téc. Administração |
| Sílvia Michels | Professora |
| Sônia Maria Schmitz | Professora |

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