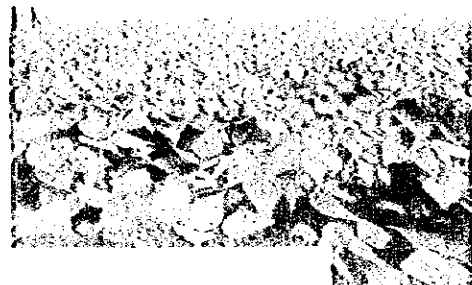


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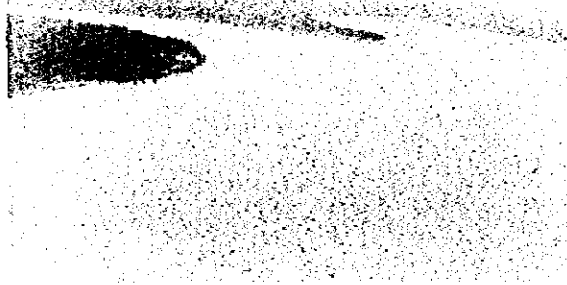
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STATE OF TOCANTINS  
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**THE  
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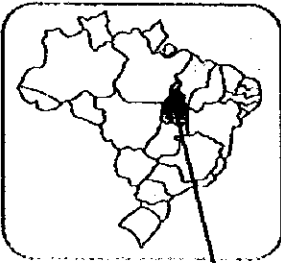
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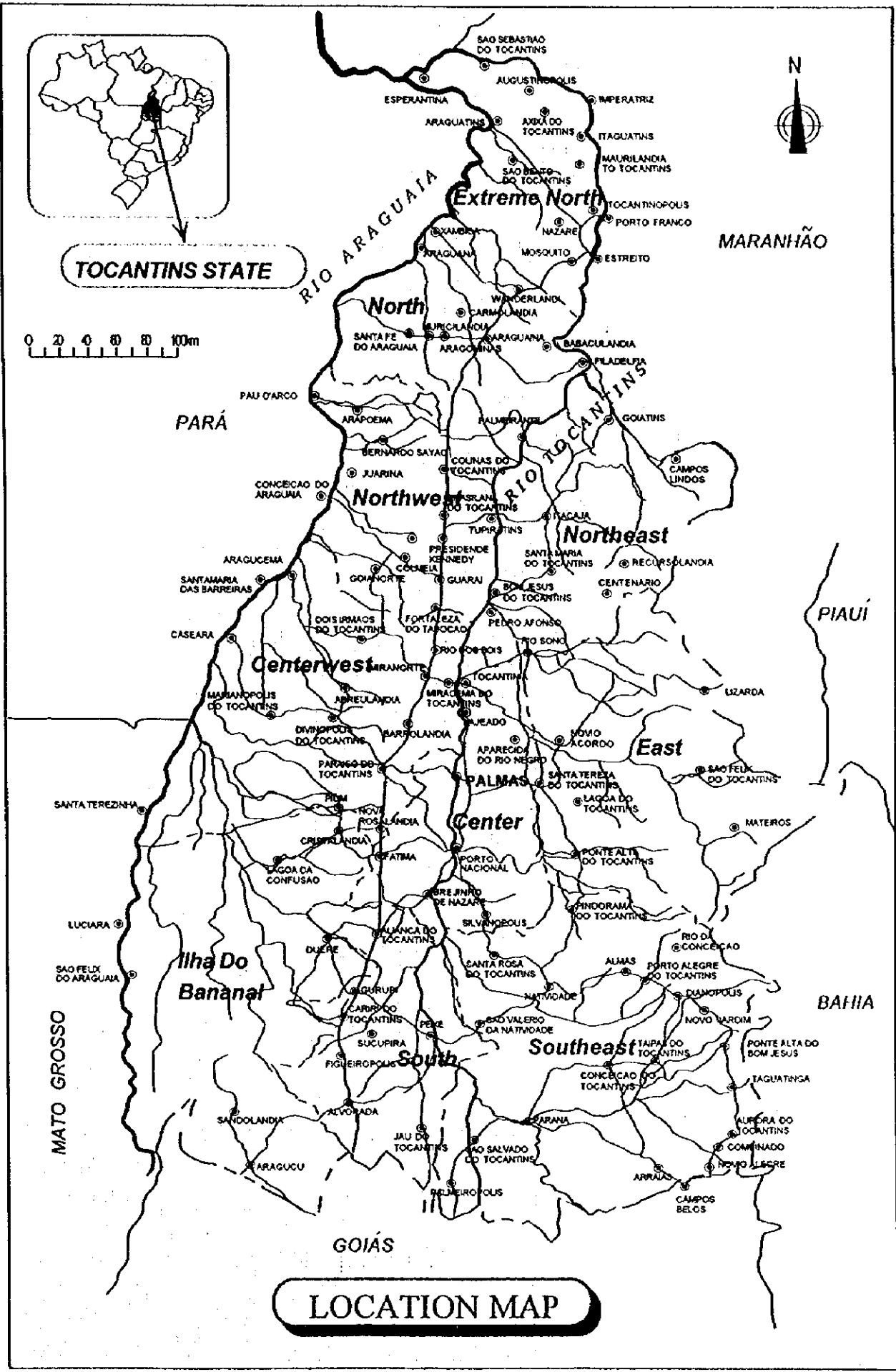
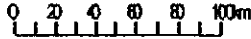
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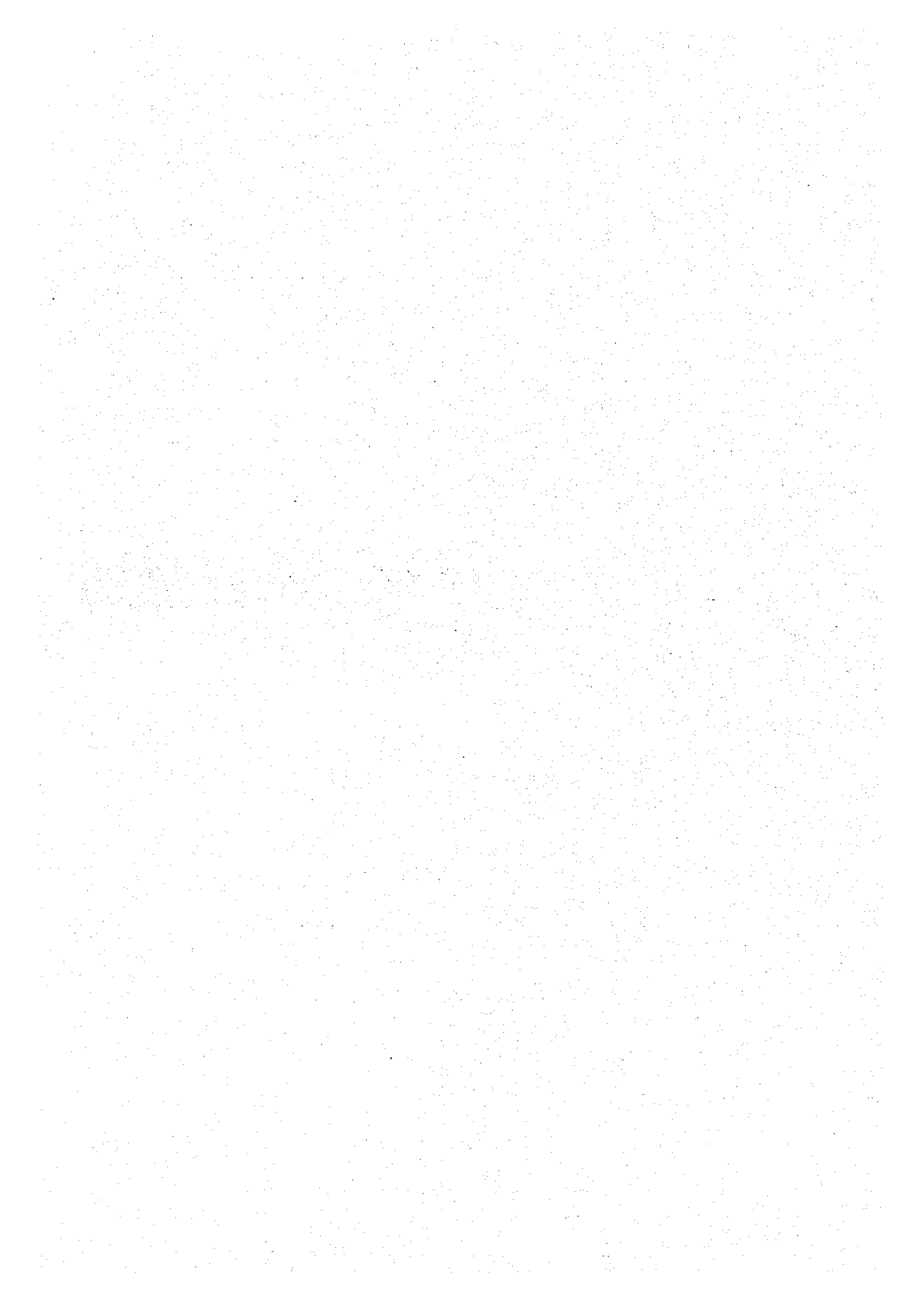


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**ABBREVIATIONS  
AND ACRONYMS**



## ABBREVIATIONS AND ACRONYMS

	Portugues	English
<b>ABCAR:</b>	Associação Brasileira de Crédito e Assistência Rural	Brazilian Association for Credit and Rural Assistance
<b>APA-TO:</b>	Alternativas para a Pequena Agricultura no Estado do Tocantins	Alternatives for Small Farming in the State of Tocantins
<b>AI</b>	Inseminação Artificial	Artificial Insemination
<b>AHITAR</b>	Administração da Hidrovia Tocantins Araguaia	Tocantins - Araguaia Hydroway Administration
<b>BASA:</b>	Banco da Amazônia	Bank of Amazon
<b>B.B.</b>	Banco do Brasil	Bank of Brazil
<b>BIRD</b>	Banco Internacional de Reconstrução e Desenvolvimento	International Bank for Reconstruction and Development
<b>BID</b>	Banco Interamericano de Desenvolvimento	Inter-American Development Bank
<b>BNDES:</b>	Banco Nacional de Desenvolvimento	National Bank for development
<b>BOT</b>		Build, Operate, Transfer
<b>CAMPO:</b>	Companhia de Promoção Agrícola	Agricultural Promotion Company
<b>CASETINS:</b>	Companhia de Armazéns Gerais e Silos do Estado do Tocantins	Tocantins State General Wholesale and Silo Company
<b>CEASA</b>	Centro Estadual de Abastecimento S.A.	State Supply Center Co., Ltd.
<b>CIMI</b>	Conselho Missionário Indigenista	Indigenous Mission Commission
<b>CMDR:</b>	Conselho Municipal de Desenvolvimento Rural	Municipal Commission for Rural Development
<b>CODETINS:</b>	Companhia de Desenvolvimento do Estado do Tocantins	Tocantins State Development Company
<b>COEMA-TO</b>	Conselho Estadual de Meio Ambiente-TO	State Commission for Environment
<b>CONAB:</b>	Companhia Nacional de Abastecimento	National Supply Company
<b>CONTAG:</b>	Confederação Nacional dos Trabalhadores na Agricultura	National Confederation for Agricultural Workers
<b>CAN</b>	Confederação Nacional de Agricultura	National Agricultural Confederation
<b>CELTINS</b>	Companhia de Energia Elétrica do Tocantins	Electric Energy Company of Tocantins
<b>CPA</b>	Cedula de Produto Rural	Rural Product Bill
<b>CPT:</b>	Comissão Pastoral da Terra	Land Pastoral Commission
<b>CVDR</b>	Companhia Vale do Rio Doce	Vale do Rio Doce Company
<b>DATER:</b>	Departamento de Assistência Técnica e Extensão Rural	Department for Technical Assistance and Rural Extension
<b>DNER</b>	Departamento Nacional de Estrada Rodagem	National Department for Highways
<b>EAFA:</b>	Escola Agrotecnica Federal de Araguatins	Araguatins Federal Agrotechnical School
<b>EMATER:</b>	Empresa de Assistência Técnica e Extensão Rural	Technical Assistance and Rural Extension Agency
<b>EMBRAPA:</b>	Empresa Brasileira de Pesquisa	Brazilian Agricultural Research Agency

	Agropecuária	
<b>EMBRATER:</b>	Empresa Brasileira de Assistência Técnica e Extensão Rural	Brazilian Technical Assistance and Rural Extension Agency
<b>EIA/RIMA</b>	Evaluación de Impactos Ambientais/Relatório de Impactos de Meio Ambiente	Environmental Impact Assessment/ Environmental Impact Report
<b>EXIMBANK</b>		The Export -Import Bank of Japan
<b>FAO</b>		Food and Agriculture Organization
<b>FAET:</b>	Federação da Agricultura do Estado do Tocantins	Tocantins State Agricultural Federation
<b>FAT:</b>	Fundo de Apoio ao Trabalhador	Workers Support Fund
<b>FECOMERCIO</b>	Federação da Indústria do Estado de Tocantins	Tocantins State Industry Federation
<b>FETAET:</b>	Federação dos Trabalhadores na Agricultura do Estado do Tocantins	Tocantins State Agricultural Workers Federation
<b>FGTS:</b>	Fundo de Garantia por Tempo de Serviço	Working Period Guarantee Fund
<b>FGV:</b>	Fundação Getulio Vargas	Getulio Vargas Foundation
<b>FNO:</b>	Fundo Constitucional de Financiamento do Norte	Financing Constitutional Fund of North
<b>FIETO</b>	Federação Industrial do Estado do Tocantins	Tocantins State Industrial Federation
<b>FINAM</b>	Fundo de Investimento Amazônica	Amazonian Investment Fund
<b>FUNAI:</b>	Fundação Nacional do Índio	National Indian Foundation
<b>GDP</b>		Gross Domestic Product
<b>GRP</b>		Gross Regional Product
<b>HDI</b>		Human Development Index
<b>IBAMA:</b>	Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis	National Institute for the Environment
<b>IBGE:</b>	Instituto Brasileiro de Geografia e Estatística	Brazilian Institute of Geography and Statistics
<b>ICMS:</b>	Imposto sobre Circulação de Mercadorias e Serviços	Merchandise and Services Circulation Tax
<b>INCRA:</b>	Instituto Nacional de Colonização e Reforma Agraria	National Institute for Resettlement and Agrarian Reform
<b>INSS</b>	Instituto Nacional de Serviços Sociais	National Institute for Social Services
<b>IPEA</b>	Instituto de Pesquisa Economica Aplicada	Applied Economics Research Institute
<b>ITERTINS:</b>	Instituto de Terras do Estado do Tocantins	Tocantins State Land Institute
<b>JICA</b>		Japan International Cooperation Agency
<b>MAA:</b>	Ministério da Agricultura e do Abastecimento	Ministry of Agriculture and Supply
<b>MST:</b>	Movimento dos Sem Terra	Landless Movement
<b>MT</b>	Ministério de Transporte	Ministry of Transport
<b>NATURATINS</b>	Instituto Natureza do Tocantins	Tocantins Institute of Nature

<b>NGOs</b>		Non-Governmental Organizations
<b>NPO</b>	Núcleo de Produção Agrícola	Agricultural Production Nucleus
<b>ODA</b>		Official Development Assistance
<b>OECE</b>		Overseas Economic Cooperation Fund
<b>PCS</b>	Programa de Comunidade Solidaria	Solidified Community Program
<b>PEDA-TO</b>	Programa de Desenvolvimento Agrícola do Estado de Tocantins	Tocantins State Agricultural Development Program
<b>PESMITO</b>	Pesquisa de Sanidade Materno Infantil de Tocantins	Maternal and Infant Health Research in Tocantins
<b>PGPM</b>	Política de Garantia de Preço Mínimo	Minimum Price Guarantee Policy
<b>PMDR:</b>	Plano Municipal de Desenvolvimento Rural	Municipal Plan of Rural Development
<b>PROCERA:</b>	Programa Especial de Crédito para a Reforma Agrária	Special Credit Program for Agrarian Reform
<b>PRODECER</b>	Programa de Desenvolvimento de Cerrado	Cerrado (Savanna) Development Program
<b>PRODEPEC</b>	Programa de Desenvolvimento Pecuário	Livestock Development Program
<b>PRODIAT</b>	Programa de Desenvolvimento Integral de Araguaia Tocantins	Araguaia-Tocantins Development Program
<b>PRONAF:</b>	Programa Nacional de Apoio a Agricultura Familiar	National Program for Supporting Family Agriculture
<b>RURALTINS:</b>	Instituto de Desenvolvimento Rural do Estado do Tocantins	Tocantins State Rural Development Institute
<b>SAG:</b>	Secretaria de Estado da Agricultura	State Secretary of Agriculture
<b>SDR:</b>	Secretaria de Desenvolvimento Rural	Secretary of Rural Development
<b>SEBRAE:</b>	Serviço Brasileiro de Assistência a Micro e Pequena Empresa	Brazilian Service for Assistance of Micro and Small Enterprises
<b>SEDUC</b>	Secretaria de Educação	Secretary of Education
<b>SEFAZ</b>	Secretaria de Fazenda	Secretary of Finance
<b>SEI</b>	Sistema Estadual de Informática	State Information System
<b>SEPLAN</b>	Sistema Estadual de Planejamento e Meio Ambiente	State System for Planning and Environment
<b>SENAR:</b>	Serviço Nacional de Aprendizagem Rural	National Service for Rural Apprenticeship
<b>SESAU</b>	Secretaria de Saúde	Secretary of Health
<b>SESC:</b>	Serviço Social do Comércio	Commerce Social Service
<b>SESI:</b>	Serviço Social da Indústria	Industry Social Service
<b>SETAS</b>	Secretaria de Trabalho Ação Social	Secretary of Labor and Social Action
<b>SETO</b>	Secretaria de Transporte e Obras	Secretary of Transport and Works
<b>SNCR</b>	Sistema Nacional de Crédito Rural	National System for Rural Credit
<b>SINCTUR</b>	Secretaria de Indústria Comércio e Turismo	Secretary of Industry, Commerce, Tourism
<b>STR:</b>	Sindicato de Trabalhadores Rurais	Rural Workers Syndicate
<b>SUDAM</b>	Superintendência de Desenvolvimento da	Supervision for Development of Amazon

	Amazônia	
<b>SUS:</b>	Sistema Único de Saúde	Health Unique System
<b>TR</b>	Taxa Referencial	Referential Tax
<b>TJLP</b>	Taxa de Juro de Longo Plazço	Long-term Interest Rate
<b>UFG:</b>	Universidade Federal de Goiás	Federal University of Goiás
<b>ULBRA</b>	Universidade Luterano Brasileira	Brazilian Lutheran University
<b>UNDP</b>		United Nations Development Program
<b>UNITINS:</b>	Universidade do Tocantins	University of Tocantins
<b>USP:</b>	Universidade de São Paulo	University of Sao Paulo
<b>ZEE</b>	Zonamento Econômico Ecológico	Economic Ecological Zoning
<b>ZPE</b>	Zona de Processamento de Exportação	Export-oriented Processing Zone

## **ANNEX I**

### **SOCIO-ECONOMIC BACKGROUND IN THE NATIONAL AND INTERNATIONAL PERSPECTIVE**



## ANNEX I

### SOCIO-ECONOMIC BACKGROUND FROM THE NATIONAL AND INTERNATIONAL PERSPECTIVE

#### 1 General Profile of Brazil

The Federative Republic of Brazil, which is the largest country among Latin American countries (ranked in the 5<sup>th</sup> worldwide), covers an area of 8,512 thousand square kilometers. The territory is located between 5°16' latitude North and 33°45' latitude South and between 34°47' and 73°59' longitude West. The country's climate is classified as tropical forest zone (northern part), semi-arid zone (central part), and temperate zone (southern part). In spite of its vast territory extension, the topography is less variable: about 84% of the Brazil's land is within 600 meters above sea level and only 3% is higher than 900 meters. The HDI value for Brazil is estimated to be 0.796 (in 1993), ranked in the 58<sup>th</sup> among 174 countries of the world. With this HDI value, Brazil is classified as a medium human development country (HDI value: 0.5000 – 0.799).

The country has a population of 146.8 million (National Population Census 1991), of which the urban population represents 76%; this population is distributed by group of ages in the following manner: below 14 years (34.7%), 15 - 29 years (19.5%), 30 - 59 years (38.5%), and over 60 years (7.3%). According to the Brazilian Institute of Geography and Statistics (IBGE), Brazil's population has been growing at a rate of 1.4% per annum and is estimated to reach 159.9 million in 1997. IBGE projects that the pace of the population growth in the country would decline to an average of 1.0%/year from now on bringing about an expansion of Brazilian population over 200 million by 2020. Another demographic data of the country are life expectancy at birth: 67.6 years, infant mortality rate: 42 per 1000 live births, and total fertility rate: 2.2. In addition, basic social indicators such as primary school enrollment and adult literacy rate aged 15 and above are 88% and 81% respectively.

The Federative Republic of Brazil is divided administratively into the federal district of Brasilia and 26 states and these federal district and states are integrated into five regions (North, Northeast, Southeast, South and Central-West). Economic predominance of the country is concentrated in the South and Southeast regions where there is a higher level of development in industrial, service and agricultural sectors. By contrast, the North and Northeast regions are under-developed in every socio-economic aspect, and hence imbalance between the south and north has been made up as a major agenda to be tackled by the central government over decades.

The president of Brazil is elected directly for a four-year term. Re-election of president had been prohibited up to the present term, but a bill to allow the re-election of the presidency has been ratified by the Congress. The present president, Mr. Fernando Henrique Cardoso, took office in January 1995 and is implementing various policies under the Multi-annual Plan 1996-99.

## 2 Macro-economic Sector

### 2.1 Macro-economic Policy

While Brazilian economy was admired once with an achievement of a miraculous development in the 1970s, the country had suffered from burden of external debt during subsequent decade as an outcome of enormous amount of public investment in infrastructures which had been realized relying on international financing combined with soaring of imported goods affected by oil shock, and confronted with the dark economic period of the 80' called as "Lost decade". At that period, deficit government bonds and repayment of international debt had caused chronic inflation.

After democratization in 1986, the administration had made every effort to restructure domestic economy, with focus laid on depression of inflation and cutback of government expenditure, but these efforts resulted in dismal economic performance represented by hyper-inflation associated with indexization and debilitated competitiveness of Brazilian products at international market.

Under the circumstances, the federal government had launched an economic reform plan call as "Real Plan" consisting of demonstration of the national currency (July 1994), high interest rate aimed to subdue chronic inflation, privatization policy to contribute to incorporation of small government, etc. The most conspicuous effect of the Real Plan is a success in control of inflation, but some adverse outcomes were also brought about in terms of the economic performance of the country like slow down of the GDP's growth and expansion of trade deficit attributable to debilitation of the competitiveness of the Brazilian exports.

### 2.2 Recent Accomplishments

#### 2.2.1 GDP

As the table below indicates, the leading sector, which covers the major share of contribution to the Gross Domestic Product (GDP) in Brazil, is the tertiary sector followed by the secondary and the primary sectors. The secondary sector, which is closely related to the government policy, tends to decline for the last three years.

**Share of Contribution to the GDP by Sector (%)**

Sectors	1990	1991	1992	1993	1994
Primary	11.6	11.5	12.1	12.5	14.3
Secondary	42.2	38.9	38.1	38.2	37.3
Tertiary	46.3	49.6	49.7	49.3	48.5

As it can be seen in the Table I – 2.2(1), for the period 1987 - 92, the GDP showed extremely irregular behavior attaining alternately positive and negative growth year by year, but has stabilized from 1993 onward owing to implementation of the Real Plan with



a continuous positive annual growth superior to 4.3% on average. In so far as the growth rate by sector is concerned, a considerable dispersion is observed and it is signified, judging from the unique structure of industry in Brazil, a growth pattern that could hardly be called a stable growth. Taking account of the fact that the actual growth rate has been remained very low during the 10 year period (16.3% for the 10-year-period and 1.5% per annum) is an indicative of the process followed by the Brazilian economy during this period.

Changes in domestic investment rate against GDP had been dropping after 1986 partly due to lowering of savings rate caused by skyrocketing inflation rate although it has recently been showing an upward trend.

### **2.3 Balance of Payment**

Brazil's overall balance of payment remained under constant deficit from 1989 to 1991 but it has been showing significant recovery since 1992 and the country is gradually recovering its international reputation. Evolution of the nation's overall balance of payment for the period 1992 – 96 is shown in Table I – 2.3(1).

The point that raises concern with regard to recent changes in overall balance of payment is the fact that trade balance, which had remained in surplus up to 1994, had turned to deficit for years 1995 and 1996. This point, partly due to the influence of the exchange rate of the Brazilian currency (real), would become the task of financial and industrial policy in the future. In particular, it will become an important task for the agriculture and livestock sector which contributes highly in increasing foreign exchange with exporting its commodities.

### **2.4 External Trade**

#### **2.4.1 Changes in Amount of Imports and Exports**

The trade balance that remained favorable after 1985 experienced sluggish growth of export by the influence of real currency having reached the ceiling against the dollar after implementation of the Real Plan in 1994. At the same time, the government is compelled to take some kind of foreign exchange measures as increase in imports became conspicuous and trade balance has turned to negative since 1995 (Refer to Table I – 2.3(1)).

#### **2.4.2 Changes in Amount of Exports by Sector and the Primary Sector**

Changes in amount of exports by sector in Brazil are shown in the Table I – 2.4(1). Products of the primary sector holds an important position in foreign exchange earning of the country with share in the range of 32% - 39% for the period 1993 – 1996.

## 2.5 Interest Rate and Commodity Prices under Real Plan

### 2.5.1 Interest Rate

Following the settling down of inflation resulting from the implementation of Real Plan, interest rate has been shown a downward trend but still remains at a high level. Respective interest rates for the fiscal year 1995 after the inflation had been settled down are as follows :

Major Interest Rates (%)	1994	1995	1996
Over/Selic	56.4	38.9	23.9
Poupança ( time deposit )			
TR	40.5	17.3	11.0
Long-Term Interest Rate (TJLP)	26.0	17.7	11.0
( Consumer Price Index: IGP-M)	-	15.25	9.20

These interest rates are particularly problematic for the agricultural sector because time deposit interest rate, TR interest rate and TJLP interest rate are applied to agricultural financing. The problem remains in the sense that these interest rates are always set higher than the inflation rate to promote savings trend of the people.

### 2.5.2 Price Trends

Although inflation settled down after implementation of Real Project, gap exists between change of prices in respective sectors which is turning into a problem. Rate of price increase between August 1994 and July 1995 for the major sectors is as follows.

#### Rate of price increase between August 1994 and July 1995

Category	Index(%)
Consumer prices	19.12
Construction materials prices	34.35
Farm-gate prices	2.38
Agricultural inputs prices	27.35
Labor cost	108.2

Judging from the above table, farm-gate prices increased only by 2.38%, while prices of agricultural inputs went up by 27.35%. The problem with farm operation is that prices of agro-products can not keep pace with the increase in general consumer prices and that farm inputs prices are going up at an even faster rate.

Meanwhile, seeking price stabilization of staple food such as rice by constantly adjusting supply and demand through import is a feature of Real Plan which places emphasis in terms of its policy on maintaining stable prices of fundamental requirements of life and is believed to have had considerable impact on agricultural production activity. In addition, low international prices of exported agricultural products in the recent years, combined

with the effect of high real value of real currency against the dollar is considered as the beginning of a difficult period for export-oriented producers.

### **3 Federal Government's Policies**

#### **3.1 Multi-annual Plan**

Stipulated by constitution, the Brazilian president is obliged to elaborate the multi-annual plan which contains the national development program covering four years from the second year of his term to the subsequent first year of the expiration of the term within the first year of the presidential term. The present president, President Cardoso, formed his administration's Multi-annual plan 1996 - 1999 (hereinafter referred to as "PPA") in September 1995.

The principal objectives of the PPA are as follows :

1. Fiscal equilibrium target, as a part of the anti-inflation policy and coverage of social debt
2. Growth target, as necessary condition for incorporation of vast segment of population who are at present excluded from formal labor and consumption markets
3. External target; to take account of the necessity to maintain financing of the economy on sustainable basis and to drive the country into the world market.

The above three objectives contemplate an accomplishment of balanced national economy and re-construction of economic structure of the country with an eye laid on the external economic circumstances.

Apart from the above mentioned objectives, the PPA comprises of the following three strategies for development, to which action programs are established.

#### **I. Construction of modern and efficient nation**

For attaining budgetary equilibrium of the nation, it is a prerequisite to put administrative reform into force and to reduce government expenditure by means of modernization and rationalization to cover all of the government sectors. Promotion of privatization and reform of social security system is also necessary.

#### **II. Alleviation of spatial and social disparities**

Socio-economic conditions of Brazil is featured by regional disparity between the Regions of Southeast and South represented by the states of Rio de Janeiro and Sao Paulo and the Regions of North and Northeast in terms of per capita income and development of infrastructures, and this regional disparity, in turn, brings out a social conflict which is the major social problem of the country. Bearing that the regional disparity is attributable in its greater portion to the degree of infrastructures development, the Government proposes to accelerate development of infrastructures in less developed regions on the basis of the

consolidation of national axis for development (for improvement of inter-regional transport network) and inter-continental axis (for opening new route to connect neighboring countries). The present strategy conceives rational utilization of resources, creation of more job opportunities and activation of productive sectors. In addition social issues such as fostering basic education system and improvement of public health conditions is involved in the strategy in an attempt to redressing social and regional disparities.

### III. Introduction of competitiveness and productive modernization

Dynamic economic growth is closely associated with an expansion of domestic market and an increase of exportation. Necessary actions for this strategy are: modernization and development of infrastructures, acceleration of participation of private sector in development investment and rationalization of domestic productive structure.

A total sum of R\$ 45.9 million shall be invested to implement programs and project contemplated in the PPA and this sum will be financed from federal government's fiscal expenditure, foreign aid, private sector, local governments' fiscal expenditure and other sources. The federal government's fiscal arrangement will amount to R\$ 31.8 billion and will be earmarked to such social sectors which are not viable to induce an investment from the private sector. By contrast, close to 35% of the required fund for economic infrastructures development will be procured from the private sector and the federal government will share only 6.7% of the total investment. This financing proposal reflects federal government's policy to realize healthy budgetary system subletting investment in economic infrastructures to the private sector in lieu of the public sector.

As a premise in implementation of the PPA, the Cardoso administration plans to embark reforms of social security system as well as taxation and administrative system and the bills on these reforms are submitted and discussed at the National Congress. Objectives and strategies included in the PPA are strongly reflected in the policies of different public sectors including the agricultural sector.

A total of R\$ 15.3 billion is estimated as direct cost for investment of the public works, of which the federal government's fiscal expenditure covers 69.4%. The share of remaining sources are: foreign aid (5.3%), private sector (8.6%), local governments' fiscal expenditure (3.8%) and others (12.9%). Among the development projects, priority is given to structural projects (energy, communication, science and technology, agriculture), regional disparity alleviation projects (transport), and poverty reduction projects (education, public health, housing, security) and sectors with higher proportion of a budget allocation are: energy (24.9% of the total investment), communication (22.0%), transport (8.7%), public health (6.3%) and housing (5.3%).

The direct investment proposed for the agricultural sector will be R\$ 7, 289 million, equivalent to 4.8% of the total amount of the direct investment for the public works; in addition to this amount, R\$ 3,165 million will be earmarked to irrigation system development projects. It is of worth to indicate that 34% of the direct investment for the

agriculture sector is deemed to be covered by the federal government's fiscal expenditure; Meanwhile, close to 90% of the same for the irrigation projects is anticipated to be procured by the foreign aid together with the private sector. As objectives relevant to the agricultural sector, the PPA contemplates a modernization of the irrigation and transportation systems, an expansion of crops cultivated area, an enlightenment for producers by strengthening their education and training, and environmental conservation.

The projects related with consolidation of the transportation system of agro-products, which is a critical factor for acceleration of the agricultural development of the Tocantins, is included in the PPA; these projects are 1) Extension of the South-North Railroad, 2) Improvement of the National Highway R 153 and 3) Construction of a Hydroway Araguaína - Tocantins, and an investment of R\$ 279 million is proposed for these three projects.

### **3.2 Agricultural Policies**

#### **3.2.1 Historical Review on Agricultural Policies**

The core part of the agricultural policy in Brazil consists of rural credit, agricultural insurance and minimum price program; the former two items are put into force through the SNCR (Sistema Nacional de Crédito Rural = National system for Rural Credit) and the latter one is implemented by CONAB (Companhia Nacional de Abastecimento = National Provision Company).

The rural credit was started in 1965 in the name of the SNCR and was supporting farmers with an extremely low interest rate of 2.3%/year up to 1973. This low interest rate means an intervention of the government in the form of subsidy and the rural credit system contributed greatly to encouragement of the agricultural production at that time. Nonetheless, under the circumstances of the higher rate of inflation of the country, the rural credit system benefited by lower and fixed real interest rate had contradicted with other economic sectors from 1974 onwards and financing institutions of the rural credit had changed their policy in such a manner as to raise the real interest rate per year as high as 38.8% in 1980.

The expansion of money supply for the rural credit had caused partially to accelerate inflation, thus the federal government had decided to reduce total amount for the rural credit in 1980 and repealed the rural credit program which had resulted in negative interest rate in 1985. On the other hand, as measures to protect the agricultural sector, two systems were introduced; PROAGRO (Agricultural Activity Guarantee Program) and PGPM (Minimum Price Guarantee Policy).

After that it was embarked: Rural Banking Book-note System in 1996, Constitutional Finance Fund in 1989 for supporting such regions as North, Northeast and Central-west, DER saving system, introduction of commodities fund, etc.

Nevertheless, with an enforcement of a higher interest rate in the realm of the basic economic policy of the federal government aiming to depress inflation which was considered as the principal factor of instability of the Brazilian economy for long period, the agricultural sector began to show stagnating tendency being associated with various negative factors. The interest rate for rural credit had been fixed higher than the rate of the consumers price index resulting in a number of producers who became default of repayment. Producers, who once had suffered from default of credit repayment, confronted with further difficulties, because they had to pay retardation interest in addition to normal interest. All these situations had brought about negative impact on farm operation and stagnation of agricultural production stood out accordingly.

The government, in due consideration of extremely grave situation, has launched new line of rural credit introducing once again a fixed interest rate. This new credit line was applied for the crop year of 95/96 and for such staple crops as paddy, feijão beans, maize and wheat. Furthermore, in an attempt to support defaulted producers, a relief program which enables defaulted producers to postpone repayment off their debts was put into force.

In general, the federal government's basic policy is to slim functions of the central government and thus to reduce governmental intervention in the field of rural credit.

### **3.2.2 Agricultural Policies under the Present Government**

The federal government is well aware that an encouragement of import substitution industrialization with higher tariffs and customs together with government intervention on economic activities, which had been a central policy for decades, had enforced negative impacts on development and strengthening of dynamic economic activity, in particular, in the field of modernization and diversification of traffic and port infrastructure. This disadvantageous situation had charged transporting agencies extremely elevated transportation cost which is notoriously called as "Brazilian cost" and had debilitated the competitiveness of Brazilian products at international market.

The federal government, with an eye on strengthening the competitiveness of the country's agricultural commodities at the international market, intends to prioritize modernization and rationalization of infrastructure. As for modernization and rationalization of infrastructure, particular attention will be paid to promotion of privatization of railways and ports operation, realization of fluvial transportation system as measures to market farm products under joint operation system taken initiative by the private sector, reduction of taxation on exports and capitals, etc.

### **3.2.3 Agricultural Policy Reform Proposals**

As for agricultural policy, the federal government has conceived two proposals: a transitional proposal and a long-term proposal. The former proposal intends to adjust prevailing agricultural policy to the actual macro-economic performance attained as a consequence of stabilized economic situation and shall lay focus on alleviation of

governmental intervention to economic activities and on encouragement of market-oriented agricultural production. Meanwhile, the latter proposal shall have target of reconstructing agricultural sector for free competition of the 21<sup>st</sup> century from the viewpoint that the agricultural sector plays strategic role in expanding the share of Brazilian products at the international market.

### **(Transitional proposal)**

This proposal is composed of reforms regarding 1) Minimum price program (PGPM), 2) Rural credit, 3) Crops storage system presided by government, and 4) Rural Insurance System.

#### **(1) PGPM**

This program, started to be effective in the 1930, had contributed in the past to stabilization of farm income as well as strengthening producers' capacity in determining their farm products. The program, on the other side, has a function to store farm products purchased by the public sector and the same function which entails troublesome jobs on the public sector. In this connection and in view of attaining an open economy, the PGPM is faced with an opportunity for reform. With an objective to alleviate public sector's role, the federal government established the Option Sales Contract system in April 1997 and intends to diffuse this system in lieu of the PGPM.

#### **(2) Rural Credit**

Taking account of decreased dependence of Brazilian agriculture sector on public finance together with accomplishment of economic stabilization and progress of regulation relevant to introduction of external funds into agricultural sector, it is predicted that public funds earmarked to the rural credit would decline drastically from the next year onwards. This prospect would hasten the negotiation of rural credit between commercial banks and farmers, although the government would persist on supporting socially-handicapped small farmers through PRONAF.

Note: The federal government's intention on the reform of the rural credit is supposed to have been judged to be rudimentary in view of the prevailing performance of the agricultural sector in Brazil. The rural credit system for the agro-year 1997/98 has shown a significant improvement in the realm of disbursed amount and interest rate.

#### **(3) Crops Storage System**

Public-oriented crops storage system is out of fashion under open economic circumstances. With progress of economic liberalization and improvement of access to external market, there is no doubt that the importance of crops storage system would diminish. This reform, nonetheless, does not imply that the public sector would cease all of their functions related with crops storage, but would continue it for such crops which are deficient at international market and are mainly supplied to the domestic market.

#### **(4) Rural Insurance**

Since the farm output is affected greatly by natural conditions, rural insurance system is indispensable for realization of stable farm operation. It is worthy to review on prevailing rural insurance system in respect to an elevated rate of premium, which is closely associated with higher production cost. At present, EMBRAPA is in charge of zoning of productive regions for the purpose of encouraging crop cultivation according to land capability assessment by region. This zoning task will serve lowering insurance premium if crop cultivation is carried out according to land capability assessment. In addition, small farmers benefited by PRONAF and PROCERA are expected to be applied exclusively discounted premium.

#### **(Long-term proposal)**

This proposal shall aim at improvement of agriculture-related activities, reduction of public intervention on marketing activities, etc. Special attention shall be paid to the following four fields.

##### **1. Reconstruction of research and technology extension system**

Despite private sector's participation in the field of crops and livestock, research is conspicuous in these days, and public organizations still play an important role in development of advanced technology. The proposal in this field falls on sliming and streamlining of administration department of the research systems which is in charge of EMBRAPA so that specialization and crops for research may be fruitful. Actually, it is delineated to orient the Brazilian agricultural sector toward internationally efficient and competitive sector through rationalization of nation-wide land use according to specific characteristics of respective region of the country. In this context, it is a prerequisite to conduct an agronomical survey on the national land so as to elaborate land classification map to be used for crop eligibility.

##### **2. Expansion, modernization and diversification of port facilities and transportation network**

The critical issue on development of port and land infrastructure is to identify the most economically viable route in marketing agriculture-based products under the initiative of the private sector and to find out the most promising financing source. The federal government has proposed two transportation systems - by railroads and hydroway - and the following four routes are prioritized in preference to other routes.

- Northwest Axis (The route connecting Porto Velho of the Rondonia State with Itacoatiaria of the Amazonia State)
- Center-north Axis (The route connecting Araguaina - Tocantins Hydroway with Carajás Railroads and South-North Railroads)



- Eastnorth Axis (The hydroway of the San Francisco River connecting Pirapora of the Mato Grosso State with Petrolina of the Pernambuco State)
- Center-east Axis (The route connecting Porto de Tubarão of the Espírito Santo State with Belo Horizonte of the Minas Gerais State through Vitória Minas Railroads and from Belo Horizonte to Pirapora through RFFSA Railroads )

### 3. Renovation and intensification of animal and plant disease control system

The standardization to control animal and plant diseases is at present of much concern at the international market. As for the plant disease control, an immediate action is required and more sophisticated tasks are essential in this field of research. It is a worldwide fashion to take up frequently an issue of disease control in an attempt to protect domestic products and the Brazilian government is well comprehended that it is a matter of public concern to tackle with the issue of disease control so as to lay foundation stone for facilitating public sector's participation in the international market with improved efficiency and quality. Priority in disease control shall be given to solving any items relevant to agricultural production which may cause to impede national products' access to the international market.

### 4. Institutional arrangement for promotion and expansion of private sector's participation in marketing field

CONAB, which is a governmental agency responsible for marketing of agro-products, shall centralize their intervention in supporting small farmers and in taking necessary measures in case of extraordinary circumstances. Besides, CONAB shall take charge in improvement of market information provision system on farm-gate and export prices of agro-products and shall take efforts in opening market and price formation process to public.

#### 3.2.4 Institutional Re-orientation Project of Ministry of Agriculture (PRIMA)

This project has a primary objective of introducing advanced methodology (institutional arrangement) into the agriculture and livestock sector in such manner as to facilitate an enhancement of quality and competitiveness which enables to produce substantial benefits to agriculture-based industry. The essential orientation of this project is to target comprehensively all kinds of sub-sectors related with agricultural production; emphasis will be laid on collection of advanced technology and information, intensification of profitability and competitiveness, improvement of animal and plant disease control system and grading up of quality on produces and services.

### **3.2.5 Supplementary Explanation on the Agricultural Policy**

#### **(1) Rural Credit**

The detailed description on the subject is given in the Annex VII, Section 4, thus the description hereinafter is limited to a brief explanation related with the section 4.3 of the present annex.

##### **1) Credit to cover production cost of crops and livestock**

- (i) This is the most representative rural credit line established by the federal government for the respective agro-year and is a synonym for the rural credit. Banking institutions in Brazil are obliged to earmark a fixed proportion on 90% of the amount of their ordinary deposit for the rural credit. The total amount to be earmarked to rural credit, the proportion of credit amount by crop, the interest rate, etc. are determined by the federal government taking into account of the national economic condition, agricultural production circumstances, agricultural policies and so on. Included in this credit line is some portion of the fixed investment.
- (ii) In line with the policies of the multi-annual plan, the federal government intended to cut down the rural credit system, but, due to unfavorable accomplishment of the agricultural production, the rural credit for the agro-year 97/98 has been improved both in disbursed amount and in interest rate in comparison with the agro-year 96/97. With regard to the "cerrado" regions represented by the Central and Northwest Regions including the State of Tocantins, the credit amount for cultivation of soybeans has hiked from R\$ 30,000 to R\$ 100,000. It is supposed that this hiked amount reflects the importance of soybean as an exportable crop.
- (iii) New credit line – pre-custeio (investment prior to farming) - has been established for the agro-year 96/97. This credit line is proposed to support farmers or associations of farmers who wish to sow intentionally obtaining the required fund earlier enough. This is a welcomed improvement because there had been not a few farmers who failed to sow at optimum opportunity due to delay in disbursement of credit.

##### **2) Other credit lines**

The credit lines proposed by the federal government other than that cited in the 1) above are the credit for the PRONAF (the program for encouragement of family-based agriculture intended for small farmers) and the credit for beneficiaries of the agrarian reform programs of INCRA such as PROCERA, etc. In addition, a specific credit line is proposed by FNO for the Legal Amazon Area. Information on these credit lines is given in the Annex VII.

**(2) Relief Measures to Rural Debtors - SECURITIZAÇÃO**

- 1) Considering the increasing number of heavily indebted producers, affected by the extinction of government subsidies in mid 80's, besides the Collor Plan in which a 43% price adjustment was applied to products, against 81% of debts, the government took the decision of saving the producers with resources of R\$ 7 billion.
- 2) The debtors, object of this measure, with debts up to R\$ 200,000 accounting for 35,000 producers, are going to be benefited with the following conditions: repayment period of 7 to 10 years, grace period of 2 to 3 years and interest rate of 3%/year payable with equivalent products.
- 3) The debtors out of the range of this measure, with debts over R\$ 200,000, shall negotiate directly with the banks. The beneficiaries of this measure are, in majority, medium scale producers, who are effectively the responsible for the Brazilian agricultural production. Nevertheless, they don't count on patrimony or sufficient negotiation strength to freely ask for resources in the financing market, as clearly demonstrated by the necessity of this salvation measure.

**(3) National Program of Strengthening Family-based Agriculture- PRONAF**

- 1) The PRONAF's principal objective is enhancement of living standard among family-based farmers, through an increase in agricultural production. These farmers represent nearly 75% of the agricultural and livestock production units accounting for 5.8 million in total. This program, which constitutes the core program in the realm of the federal government's supporting policies for small farmers, have the following components, namely:

- Reorient the regional public policies in order to benefit the familiar agriculture
- Financing to municipalities, in infrastructure and services improvement projects
- Education to familiar producers aiming to raise their technical level.

(The PRONAF was founded by the Decree - Law no. 1946 of June 28, 1996)

- 2) Financing conditions for family-based agriculture are as given below.

- Crop farming for individual farmers or associations : R\$ 5,000/beneficiary
- Rural investment for individual farmers: R\$ 15,000/beneficiary
- Rural investment for associations: R\$ 75,000/beneficiary
- Interest rate for crop farming: 9%/year (96/97); 6.5%/year (97/98)
- Interest rate for rural investment: 6%/year + T.J.L.P with discount of 50% (96/97); 6.5%(fixed)(97/98)
- PROAGRO: 2%; and 1.7% in the irrigated areas

- 3) For the agro-year 96/97, a total sum of R\$ 1 billion was allocated to this program, of which R\$ 200 million was for crop farming and the remaining R\$ 800 millions for rural investment. General credit for crop farming is negotiated between farmers and banking institutions without intervention of public agencies, meanwhile public agencies heavily intervene in this program in view of supporting financially disadvantaged small farmers. A total sum of R\$ 1,605 million has been financed as source of this program for the agro-year of 97/98.
- 4) As explained in the 1) above, state and municipal governments also benefit from this program for their support in such activity as construction of dairy plant.

**(4) Agricultural Insurance - PROAGRO**

- 1) The importance of rural insurance is unquestionable, taking into account the necessity of reducing inherent risk to agriculture which highly depends on natural factors. However, the rural insurance was always regarded as one of the factors to increase the production costs, due to the high premium values. On the other hand, EMBRAPA is carrying out a research about rainfall distribution, occurrences of hailstorm and white frost and the composition of soil in several Brazilian regions, in order to elaborate the agricultural aptitude zoning with information of all appropriated species selected according to the reality of each region.
- 2) The government establishes a reduced aliquot, as presented below, aiming to promote the cultivation of products indicated in the zoning.

**PROAGRO's Premium by Zoning**

Types	Without adhesion to the zoning	With adhesion to the zoning
Feijão beans (without Irrigation)	11.7%	6.7%
Corn, Soybean (without Irrigation)	7.0%	3.9%
Sugar cane (without Irrigation)	7.0%	3.9%
Others (without Irrigation)	7.0%	3.9%
Irrigated crops	4.7%	1.7%
Livestock	1.2%	
PRONAF/PROCERA (INCRA settlements)	2.0%	

**(5) Policy for Guarantee of Minimum Prices - PGPM**

- 1) Hitherto, the policy adopted by the government was the promotion of production through purchases carried out by the government, in case the effective price was smaller than the minimum price which was fixed at a relatively high level. The continuation of this policy became, however, difficult due to the liberalization of external commerce represented by the MERCOSUL, and due to the lack of financial resources. At present, the government is changing the policy in order not

to commit intensely with the production, even continuing to fix minimum prices. In parallel, the government is trying to minimize the storage volume.

- 2) In April of this year, the system "Optional Contract" was introduced, in which the producer can acquire the government contract record, presenting the period and amount of selling. For example, if the effective price in September is R\$ 8.0 by bag, against R\$ 7.5 of the minimum price, the producer can cancel the contract, carrying out the selling to third party. In case the effective price is R\$7.0/bag, the producer can carry out the selling according to the government contract, who will assume only the R\$ 0.5 difference, less than the necessary amount to purchase the total product, attaining the political objective of raising the right of choice of producers. This system, applied only for corn this year, can be useful when applied, with priority, in destitute regions, differed from other regions.
- 3) The organism responsible for the operation is CONAB, fact which shows the government policy of reducing its own size. The contract record can also be used as bank financing guarantee.

**(6) Rural Products Bill - CPR**

- 1) The CPR is a representative bond of rural products deliver promise, which can be issued by the producers or their associations, including cooperatives. It can be negotiated in stock markets, being possible to be used in payments to financial institutions, since registered in a record and liquidation system managed by institution authorized by the Central Bank.
- 2) This system is a legal instrument for the beforehand selling of production, which is being spread as "Contract of Selling" among several Brazilian regions, mainly aiming to obtain resources to finance the cultivation and inputs. The Bank of Brazil and other banks start to concede authorization to CPR issuers, by charging a commission.
- 3) The green product selling system was a marginal way to obtain resources adopted by the producers excluded from the bank financing system. The fact of this system being authorized and legalized by the government and financial institutions can be considered one of the unforeseeable facts of this Country.

**(7) Caipira 63**

- 1) The caption is a secular name indicating the Central Bank's Decree No. 2148 dated March 16, 1995 and is a policy for promoting finance from foreign banking institutions in provision of credit for crop farming, rural investment and marketing of harvests. In this connection, forced by the Central Bank, commercial banks are obliged to collect fixed amount or more from foreign banking institutions to earmark for this program. Should the interest rate be fixed at 6% at monetary market of the world, it shall be converted to 10% taking account of Brazil's

country risk, and Brazilian banking institutions are supposed to impose, in compliance with prevailing practice in Brazil, the interest rate of 16% on their credits to farmer. Debtors of this credit line are expected to bear risk related with fluctuation of exchange rate.

- 2) This credit line is intended for manufacturers and sales agents of agricultural fertilizers and chemicals, so farmers benefited by this line remained as low as 10% in terms of disbursed amount of credit. Nevertheless, the said manufactures and sales agents will credit farmers with provision of fertilizers and chemicals, therefore the proportion of the disbursed amount contributing to crop production becomes higher. This kind of practice is at present very common among manufactures and sales agents, in particular for production of soybeans and other exportable commodities. Thus, the more common becomes this practice, the more amount of credit under the Caipira 63 program is disbursed.

#### **(8) Tributary Reform**

The Brazilian government had imposed duplicated taxes on agricultural commodities accounting for 20% of their retail prices. This kind of taxes had been imposed on exportable commodities, which had abated their competitiveness at international market.

Starting 1997, the federal government had decided not to impose the ICMC on exportable commodities. The ICMS is a state tax. In São Paulo State, the major exporting state, this measure has reduced the fiscal revenue by some 20%, while the state government of Tocantins suffers scarcely from this tributary reform.

#### **(9) Multi-modal Transportation Corridors**

- 1) This program aims to optimize the investment in transportation infrastructure, including the private sector investment, for the flowing of agricultural products and their inputs, through the integrated utilization of highways, railways and hydroways. By means of executing this program, the government intends to deeply reduce the transportation costs and, consequently, to raise the international competitiveness of products.
- 2) The four main corridors are:
  - Northwest Corridor
  - Center-North Corridor
  - Northeast Corridor
  - Center-East Corridor

Of the above-mentioned four corridors, the Center-North Corridor is directly related with the State of Tocantins and has the following salient features: the corridor is designed to connect the waterways of the Tocantins and the Araguaína with the seaport of São Luis through the North-South railroad and the Carajás Railroad. Development of this corridor comprises the whole area of the State of

Tocantins and some part of the states of Pará, Maranhão, Piauí, Goiás and Mato Grosso covering an area of 80 million ha in total, of which optimum lands for grains cultivation cover 35 million ha.

- 3) Despite the level difference in the Tocantins river between the drought and rainy seasons, this corridor will bring a great advantage in convenience and cost of the transportation towards the Northeast region and for exportation, when the North-South railway starts its operation until Estreito, linking the federal highway to the railway.

#### **4 Characterization of the Agricultural Sector**

Although the agricultural sector contributed as low as 14% (1994) of the Gross Domestic Product, it plays an important role within the context of the national economy; about one-quarter of the national population live in rural area, 27% of the economically active population are employed by the agricultural sector, and close to 25% of the country's exports earning are represented by agro-products.

The performance of the agricultural sector nowadays is stagnated, being highly affected by the government policy in pursuit of the "Real Plan" and, consequently, a few small and micro farmers have given up agricultural activity leaving from their lands. This phenomenon associated with the movement of landless farmers is reckoned as one of the social conflicts of the country, and thus the solution of the problem has become a major agenda of the central government.

##### **4.1 Land Use and Land Tenure**

Brazil has a national territory of approx. 846 million ha, of which it is predicted that only 76.8 million ha (11%) is used for crop farming purpose. Land used for farming purpose is further divided into that for perennial crops (85%) and for permanent crops (15%). In addition, irrigation land accounts for 2.8 million ha in total. Meanwhile, land used for grazing represents about 167 million ha and three quarters of which is covered by natural pasture. Land occupied by forests is estimated roughly to be 569 million ha.

The latest available figure (the agricultural census in 1985) indicates the status of land ownership in Brazil as follows: owners (61%), renters (9.4%), sharecroppers (7.3%) and squatters (17%); squatters are concentrated in the Northeast Region with a share of more than 60%. The average farm sizes by type of producers are: owner (90 ha), renter (20 ha), sharecroppers (11 ha) and squatters (17 ha). It is worth while to point out that the farm size of squatters is larger than that of sharecroppers. Like most of the South American countries, a highly skewed farmland distribution is conspicuous phenomenon in Brazil; 15% of the total extension of farmland is occupied by "fazenda" owners with a land size larger than 10,000 ha, while the total land area of small and micro farmers with a holding smaller than 10 ha represents as small as less than 3% even though their number accounts for more than half (53%) of the total number of farmers in Brazil.

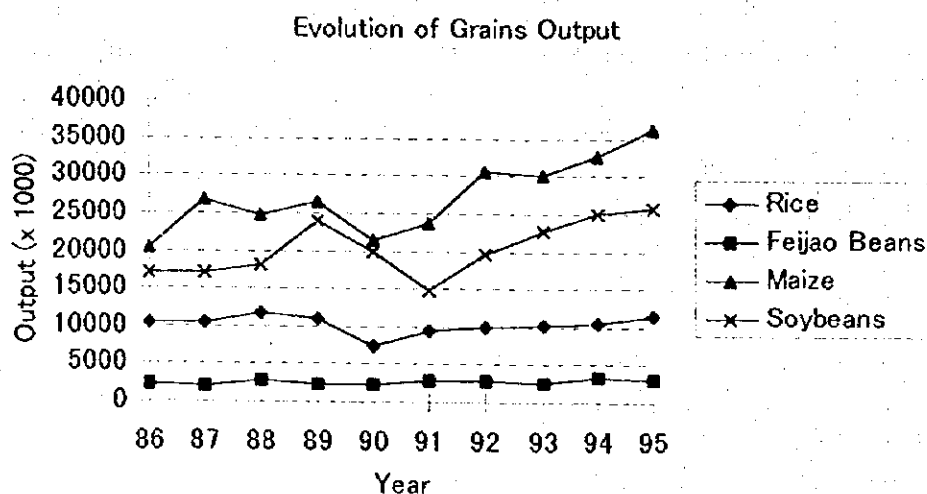
## 4.2 Farm Economy

Starting in 1985, the preferential rural financing system (at fixed lower interest rate) has been ruled out and interest rates to reflect real terms at market have been applied to the rural finance. Furthermore, prices of staple foodstuffs have been depressed within context of the Real Plan. And these circumstances lead the agricultural sector to a disadvantageous position.

After the implementation of Real Plan, farm operation shows trend of downside slide, because rise of farm inputs is much higher than that of farm products and the relative appreciation of real against US dollar has exerted negative influence over producers of staple crops (rice, feijão beans, maize) and livestock products as well as producers of exportable products.

## 4.3 Agricultural Output

The chart shown below indicates evolution of output (in tons) for major crops in Brazil during 1984-1995.



As for changes in production by crop, staple crops such as rice and feijão beans increased slightly (increased by 25% for the former and by 10% for the latter), while exportable crops such as maize and soybeans have shown significant increase (increased by 70% for maize and by 65% for soybeans). So far as the change in cultivated area is concerned, there is a slight decrease for rice and feijão beans and small increase for maize and soybeans. This evolution implies that an increase of output is attributable to an improvement of productivity rather than to expansion of cultivated area.

## 4.4 Prices of Farm Products and Production Cost

The prices of agricultural produces had been increasing at the same pace as the increase rate of average price increase before the implementation of the Real Plan. After the



implementation of the Real Plan, however, relative prices of farm produce have been declining and this trend is most noticeable in livestock products.

In the "Cerrado" regions, the main farm produce prices had been remaining nearly stable from 1990 to 1993, but they have declined for all items except coffee since the Real Plan was put into force in 1994. The decline in staple crops represented by rice and feijão beans is significant.

The behavior of agricultural production cost in recent years is resumed as follows: although the cost had been increasing at a lower rate in comparison with the average commodity prices and farm produce prices until July 1994, following the implementation of the Real Plan, it has increased over farm produce prices mainly due to jack-up in labor cost.

#### **4.5 Trade of Agro-products**

##### **4.5.1 Changes in Amount of Major Agricultural Exports**

The changes in the amount of major agricultural exports for the last 4 years is shown in Table I - 4.5(1). Coffee had been the leading export among agriculture-related commodities for a long time, but has been substituted by soybeans recently; in the year of 1996, soybean accounts for about 35% of the total amount of the agricultural exports, followed by coffee, tobacco, sugar, concentrated orange juice, beef and fruits. Among them, tobacco, concentrated orange juice and sugar are on the increase while coffee and beef suffers from stagnation. It is worthy while to remind that the amount of soybean, coffee and sugar fluctuates largely year by year according to the behavior of price at international market.

##### **4.5.2 Changes in Amount of Major Agriculture-related Imports**

Change in amount of agricultural imports including fertilizer is given in the Table I - 4.5(2). Grains and grain products are represented by rice. While supply and demand of rice is currently balanced in Brazil, importation of the grain is made in terms of price stabilization policy. While imported amount of wheat is increasing by reflecting diversification of diet among Brazilian people, the drop in amount for 1996 is the result of statistical aggregation and does not seem to indicate the reality.

##### **4.5.3 Supply and Demand of Rice in Brazil**

The recent changes in production, consumption, import and stock of rice in Brazil is shown in Table I - 4.5(3). As for the relationship between production and consumption, the need for import is presently recognized as consumption exceeded production slightly. However, it appears that the policy is to maintain 1.5 to 2 million tons of stock at the beginning of the year in an effort to stabilize the price of rice since it is a staple food.

## 5 Socio-economic Positioning of the State of Tocantins in Brazil

The state of Tocantins is the most recently established state in Brazil, accomplishing independence from the state of Goiás in 1989. The extension of the state is 277,322 km<sup>2</sup>, which represents 3.3% of the national territory, but its population (920,116 in 1991) accounts for only 0.6% of the country's population. Hence, the state is featured by scarce population density equivalent to one-fifth of the national average. Although the population growth in Tocantins had been relatively dull (nearly 2.0% per annum, which was almost the same as the national average) for the period 1980-91, it has become burgeoning recently with an annual rate of 3.3% since 1992, which is far higher than the national average of 1.4% of the same period.

The leading economic sector in the State of Tocantins is the agricultural sector represented by cattle farming contributing to the formation of the Gross Regional Product (GRP) with an approximate share of 60% in 1994. Considering the agricultural sector's participation in the GDP is around 14%, it is clear that the industrial structure in the state is heavily specialized in the agricultural sector leaving the remaining sectors in the state of under-development (in particular, the manufacturing sector of the state is conspicuously less developed with its contribution to the GRP formation as small as 4%).

The socio-economic development of the State of Tocantins has been behind in arrears of the most of the state in Brazil. The GRP per capita is an indicator which highlights an economic capability of each state, and the Applied Economy Research Institute (IPEA) estimated the GRP per capita in Tocantins to be R\$ 993, which is the lowest value among 27 states of the country except for the State of Piauí; the value is equal to 13% of that of the State of São Paulo and 30% of the national average, respectively.

The Human Development Index (HDI), which is an indicator which is invented by the UNDP, is commonly used to capture some aspects of the socio-economic development. The HDI for Brazil was calculated as 0.796 for the year of 1993 and with this value Brazil is ranked in the 58<sup>th</sup> among 174 countries of the world being classified as the medium human developed country (HDI value in the range of 0.500 – 0.799). Pursuant to UNDP's methodology IBGE had calculated HDI value for each state of the country in 1991; according to this calculation, the HDI for Tocantins was 0.540, in the 22<sup>nd</sup> among 27 states of the country and is equal to 121<sup>st</sup>, if reference is made to the countries' ranking of the world (incidentally, the state which recorded the highest HDI value was Rio de Janeiro with 0.871 being equal to the 39<sup>th</sup> in the countries' ranking of the world).

In so far as two components (life expectancy at birth and adult literacy) used in calculating HDI value is concerned, the State of Tocantins, although its GRP per capita is the lowest except for the State of Piauí, is ranked in the 14<sup>th</sup> for the former and in the 17<sup>th</sup> for the latter. All this implies is that the State of Tocantins is situated on the least developed state of the country in term of economic development, but is a medium or a slightly inferior medium state in social aspect.

Another indicator to be used for assessment of the economic capability of each state is a revenue stemmed from the ICMC. The State of Tocantins collected in 1996 as the ICMC-related revenue the amount of R\$ 138,757 thousand, which accounted for only 0.25% of the country's total sum, ranked in the 24<sup>th</sup> among 27 state of the country, while per capita revenue was R\$ 140 boosting the state's position to 21<sup>st</sup>. This per capita revenue from the ICMC was approximately 20% do the State of Sao Paulo, the highest state of the revenue, reflecting rudimentary economic activity of the state.

The federal government of Brazil, with an eye to easing negative impact of economic imbalance among state on implementation of development programs/projects, has been realizing the transfer of the fund of from the National Treasury to each state of the country in such manner as more fund is distributed to states which have less per capita income. The State of Tocantins received in 1996 a transfer amount for the sum of R\$ 521,042 thousand representing about 2.5% of the federal government expenditure in the realm. The said amount is converted into R\$ 526 per capita, which is ranked in the 4<sup>th</sup> largest amount among states of the country. Furthermore, the said per capita transfer was ten times as much as that of the State of Sao Paulo (R\$ 49). From this fact, it may be concluded that different to financially affluent states of the Southeast and South Regions, the financial operation in the State of Tocantins is heavily dependent on the transfer of fund from the National Treasury.

## **6 Outlook of Food Supply and Demand in the World**

### **6.1 Recent Forecast of World Food Supply and Demand by Celebrated Organizations**

In November 1996, the World Food Summit was held for the first time at the Food and Agriculture Organization of the United Nations ( FAO ) Headquarters in Rome and was attended by leaders and cabinet ministers of countries around the world to discuss about food security. The Rome Declaration adopted at this meeting set out as pledge of governments the reduction of the malnourished population by half from the present level of 840 million by the year 2015. In addition, the Action Plan for substantiating this pledge demanded mainly the developed countries to appropriate 0.7% of their Gross Domestic Product (GDP) to Official Development Assistance ( ODA ), although the concrete scenario for realizing the Declaration is yet to be seen.

Forecasts on world food supply and demand were announced by numerous organizations immediately before and after the World Food Summit and were followed by various evaluations and discussions after the meeting. These forecasts are compiled in the Table I - 6.1(I).

According to the table in question, the status quo scenario of the Japanese Ministry of Agriculture, Forestry and Fisheries as well as the forecasts made by FAO, the World bank and USDA all have come to the conclusion that, although numerous problems of disparity will exist among countries and regions, the world food demand-supply balance will be maintained until 2010 (2005 in USDA forecast).

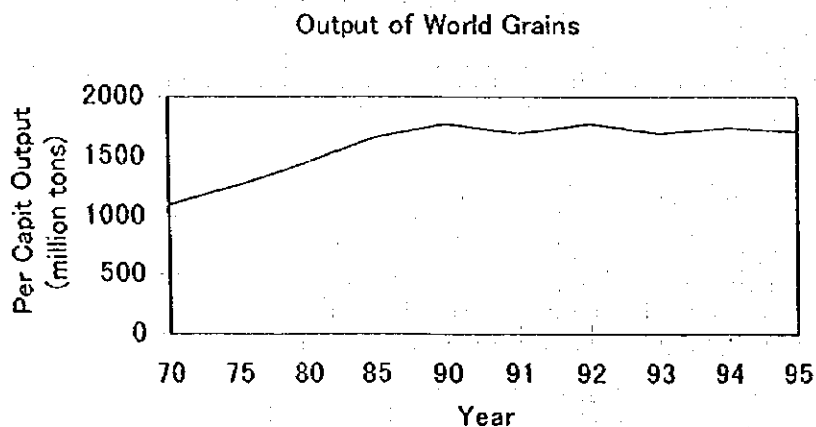
However, the World watch Institute has presented the forecast result that serious shortage of supply will occur in 2030. In addition, the restricted production scenario of the Japanese Ministry of Agriculture, Forestry and Fisheries suggests that demand- supply will become tight by 2010, possibly accompanied by slight supply shortage.

These contradicting forecast results appear to originate from the difference between two views: one expects that the increasing trend of world food production in the late 80's will continue despite some fluctuations originating from circumstantial conditions that may arise from year to year (e.g. climate, prices) while the other predicts that the stagnant production trend from 1995 onward will continue into the future owing to numerous limiting factors and become increasingly serious.

Discussions are currently taking place among researchers and research institutions of various countries and no clear international consensus has been reached with regard to long-term outlook. The World Bank is also launching a new forecast activity by taking these discussions into consideration.

## 6.2 Recent Trends of World Food Production

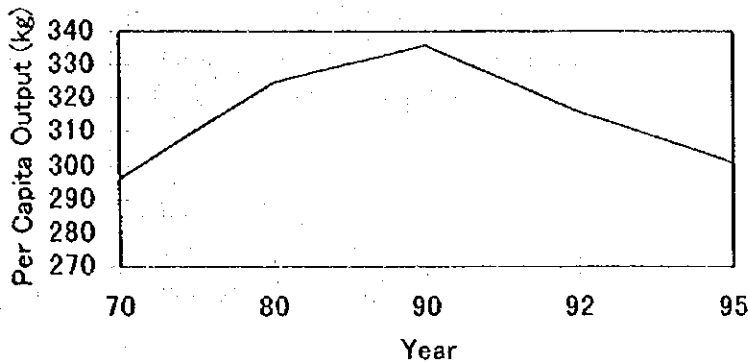
### 6.2.1 Changes in Grain Production



### World Grains Production

Total world grain production nearly tripled in 40 years from 631 million tons in 1950 to 1,780 million tons in 1990. However, the rate of increase has slowed down since 1990 and has started to decline in terms of per capita production for the entire world, signifying that increase in production has not been able to keep pace with the population growth.

Per Capita Output of World Grains



### World Grain Production per Capita

#### 6.2.2 Changes in Cultivated Land Area

Crops cultivated area in the World is shown in Table 1 – 6.2 (1). The cultivated land area per capita for the world as a whole declined by nearly 20% from 0.342 ha in 1975 to 0.272 ha in 1990 and continues to gradually decline. Main factors behind this decline are said to originate from increasing trends of desertification, drying, soil degradation, industrialization and urbanization.

#### 6.2.3 Use of Chemical Fertilizer and Production of Grains

Application efficiency of chemical fertilizer in 1984 showed an increase in yield by 9 tons for additional 1 ton of fertilizer. In 1989, however, increase in yield for additional 1 ton of fertilizer fell sharply to 1.8 tons and the volume of fertilization has been continuing to because of its lowering efficiency (see table shown below).

Relation between Grains Production and Use of Fertilizers

Year	Grains (10 <sup>5</sup> tons)		Fertilizers (10 <sup>5</sup> tons)		Increase in output/ Increase in application
	Output	Increase	Application	Increase	
1950	631	-	14	-	
1984	1649	1018	126	11	9.1
1989	1685	36	146	20	1.8
1993	1682	-3	120	-20	-

Source: Full House, Lester R. Brown

Observation of the above changes shows that some physical restricting factor is being added to the circumstantial conditions involved in food production of the world. On the other hand, the impact of changing socioeconomic conditions on the world food demand-supply cannot be overlooked as signs of major changes in the pattern of world grain trade has started to appear in the recent years. For instance, China, the country with

largest population in the world, was a net exporting country that exported 8 million tons (mostly maize) in fiscal 1994 changed to net importing country that imported 16 million tons (mostly wheat) in fiscal 1995. It goes without saying that this shift of 24 million tons over a period of 1 year had significant impact on the world's grain balance. Partly owing to this shift, international prices of grain continued to increase at an unprecedented rate from 1995 to 1996 and drastically lowered the level of year-end stock.

Furthermore, 180-degree shift of the agricultural law in the U.S. that had been playing the role of practically adjusting the world's grain demand-supply is likely to become one of the factors that further destabilize international demand-supply and amplify fluctuations of grain prices.

Note; Essence of the revision of the Agricultural Law in the U.S. Discontinuation of food supply management system including abolition of shortage payment system (a kind of subsidy) and abandonment of policy to reduce planted area.

### **6.3 Future Restricting Factors of World Food Production**

As mentioned earlier, it is almost apparent that overcoming its restricting factors is the key to future world food production. The restricting factors that may arise in the future are discussed below.

#### **6.3.1 Climatic fluctuations and food production**

According to the results of analysis on the global "greenhouse effect" reported in 1990 by IPCC, which is an intergovernmental panel on climatic fluctuations established through assistance from the World Meteorology Organization (WMO) and United Nations Environmental Program (UNEP), the world's temperature will increase by 1.5 degrees Celsius by 2050 and by 3 degrees Celsius by 2100 under the most likely scenario in which world's population and income continue to increase at the present rate. Several points were discussed to determine the effect such temperature change would have on the world food production. These points were:

1. Warming in high latitude regions
2. Shifting of monsoon precipitation closer to the poles
3. Lowering of water use efficiency for crops

The first point, warming in high latitude regions, would increase the potential for production in high latitude regions but would not make up for the lowering of production potential predicted in mid-and low latitude regions, and lower productivity for the world as a whole.

The second point, shifting of monsoon precipitation closer to the poles, would mean that increased precipitation from shifting of monsoon precipitation to northern regions would cause downpours during a shorter rainy season. As a result, the potential for agricultural

production will be reduced as the period suitable for growing crops becomes shorter while the intensity of precipitation is lowered by intensified flood and soil erosion.

The third point, lowering of water use efficiency for crops, would increase the actual evapotranspiration through higher climatic and soil surface temperature, causing significant increase in loss of water content from plants and soil and lower the potential for agricultural production.

Furthermore, increase of the world's average temperature by 3.0 degrees Celsius is predicted to raise the average sea surface by 65 cm and sink 3% of the world's land area under the ocean. This includes low-altitude farmland that produces one-third of world's crops and habitat for 1 billion people.

If this was the case, devoting all the intelligence in the world in an all-out effort to prevent global warming will be an essential task for not only world food production but survival of humanity.

### **6.3.2 Soil and Unused Land as Place for Food Production**

The world's cultivated area amounted to 1,447 million hectares in 1993 and has been declining from year to year owing to deterioration and erosion of soil that have occurred thereafter. In addition, 6 million hectares of grassland is turning into desert every year. Salinization and sulphatization of soil caused by excessive use of water are said to be the main causes of deterioration and erosion of soil.

Unused land in the world that can be cultivated is in arid and semi-arid regions that have the potential of becoming highly productive farmland through adequate use of water and soil improvement. In this sense, securing the required water resources and their efficient use would be an important key to food production.

### **6.3.3 Limitation of Water Resources and its Efficient Use**

The present volume of water resources utilized in the world has tripled since 1940 and the water used for agriculture is said to account for 70% of freshwater used throughout the world. Furthermore, it is said that water resources are being used close to its limit.

Therefore, all-out efforts must be devoted on a global scale with regard to effective use of water resources by taking into consideration of trends such as population increase, urbanization and industrialization.

### **6.3.4 Potential for Increased Production through Biotechnology**

Improvements have been made in areas such as sowing period, fertilization control suitable for different types of soil, cultivation control for crops that are being grown and improvement of timing and method for harvesting in an effort to maximize production from certain area of cultivated land.

As a result of remarkable progress in modern science, however, the crop itself has become the key factor in its cultivation and its productive capacity is unconditionally determining the results of its yield. In particular, improvement in productivity of crop cannot be expected without genetic superiority. If a crop is genetically inferior, it would be impossible to increase the yield sufficiently even if the cultivating method were perfect.

In this sense, much hope lies in the development of genetically superior crops. However, development of genetically superior crop will not produce full results unless the environment that allows manifestation of its genes is made available.

Therefore, the top priority lies in conservation of natural environment such as weather and climate and in improvement of production base such as securing of water resource since the development biotechnology alone will not solve the problem.

#### **6.4 Outlook of World Food Supply and Demand and Agriculture in Brazil**

Lester R. Brown of the Worldwatch Institute who warns about the world's future food demand-supply has note, "Brazil is one of the countries that have the most potential for increasing production. However, the country will still have trouble maintaining its self-sufficiency of grains even if considerable expansion of grain production is achieved. In fact, Brazil has not been able to maintain self-sufficiency of grains in the recent years and has become the largest importer in the Western Hemisphere."

Moreover, Brazil's population is predicted to increase by nearly 100 million by the year 2025 and reach a total of 252 million, meaning that the country will have the population close to that of the U.S. All sorts of agricultural resources Brazil can mobilize will have to be utilized to support an additional 100 million people while the people move up in the food chain and consume more animal products.

In fact, Brazil has vast arid and semi-arid regions that can be converted into highly productive farmland if the aforementioned adequate use of water and soil improvement are put into practice. The development and utilization of these lands is therefore a top priority item not only for stable food production in Brazil but for stabilization of the world's food demand- supply in the future.

For this reason, much is expected in the development of agricultural policy that will arouse the willingness to produce among farm workers.



**Table I - 2.2(1) Growth of GDP by Sector**

Year	GDP (RS x 10 <sup>6</sup> )*	Annual Growth Rate by Sector				GDP per capita	
		Agriculture	Industry	Services	GDP	Amount (RS)*	Growth Rate (%)
1986	625,080	- 8.0	11.7	8.1	7.5	4,641	5.4
1987	646,958	15.0	1.0	3.1	3.5	4,713	1.6
1988	646,311	0.8	- 2.6	2.3	- 0.1	4,624	- 1.9
1989	666,993	2.8	2.9	3.5	3.2	4,687	1.4
1990	638,311	- 3.7	- 8.2	- 0.8	- 4.3	4,408	- 5.9
1991	640,227	2.8	- 1.8	1.6	0.3	4,353	- 1.3
1992	635,105	5.4	- 3.8	0.0	- 0.8	4,251	- 2.3
1993	661,779	- 1.0	6.9	3.5	4.2	4,364	2.8
1994	701,486	9.3	7.0	4.2	6.0	4,561	4.5
1995	730,949	5.1	2.0	6.0	4.2	4,692	2.9
1996	752,877	3.0	2.5	3.4	3.0	4,766	1.6

Note: \* Constant price of 1996

Source: Boletim do Banco Central do Brasil, Agosto 1997

**Table I - 2.3(1) Balance of Payment**

Unit: US\$ x 10<sup>6</sup>

Item/Year	1992	1993	1994	1995	1996
Current transactions	2,243	1,686	2,588	3,974	2,899
Trade balance	15,239	13,307	10,466	-3,352	- 5,539
- Exports	35,793	38,563	43,545	46,506	47,747
- Imports	20,554	25,256	33,079	49,858	53,286
Services ( net )	-11,339	-15,585	-14,743	-18,594	- 21,707
- Interest	-7,253	- 8,280	-6,338	-8,158	-9,840
- Others	-4,086	-7,305	-8,405	-10,436	-11,867
Unrequited transfers	2,243	1,686	2,588	3,974	2,899
Capital	25,271	10,115	14,294	29,359	32,391
Investment	2,972	6,170	8,131	4,663	15,558
Reinvestment	175	100	83	384	447
Financing	13,258	2,380	1,939	2,834	4,302
Amortization	-8,572	-9,978	-50,411	-11,023	-14,423
Long & medium-term loans	14,975	10,790	52,893	14,736	22,802
Short-term Capital	2,602	869	909	18,834	3,995
Errors and Omissions	-1,386	-1,119	334	2,093	973

Source: Boletim do Banco Central do Brasil, Agosto 1997

**Table I – 2.4 (1) Exports Amount by Sector**

Unit: US\$ x 10<sup>6</sup>

Sectors	1993	1994	1995	1996
Primary	12,620 (32.7)	15,564 (35.7)	16,787 (36.1)	18,071 (37.8)
Secondary	25,935 (67.3)	27,981 (64.3)	29,720 (63.9)	29,676 (62.2)
- Semi-manufactured	4,226	4,660	4,259	4,750
- Manufactured	19,008	20,245	21,988	21,415
- Others	2,701	3,076	3,473	3,511
Total	38,555 (100)	43,545 (100)	46,506 (100)	47,747 (100)

Source; Boletim do Banco Central do Brasil, Agosto 1997

**Table I – 4.5 (1) Amount of Major Agricultural Exports**

Unit: FOB in million of US\$

Products	1993 (%)	1994 (%)	1995 (%)	1996 (%)	Growth Rate (%)		
					93/94	94/95	95/96
Soybeans	3,068 (36.5)	4,124 (36.6)	3,799 (32.0)	4,430 (34.9)	34.4	- 7.9	16.5
- Grounds	1,815	1,980	1,997	2,727	9.1	0.9	36.5
- Soybeans	946	1,316	770	1,018	39.1	- 41.5	32.1
- Oil	306	828	1,031	685	170.6	24.5	- 33.5
Coffee	1,282 (15.2)	2,558 (22.7)	2,462 (20.4)	2,095 (16.5)	99.5	- 5.2	- 13.7
- Beans	1,065	2,219	1,970	1,719	108.4	- 11.2	- 12.8
- Instant coffee	217	340	456	376	56.7	34.1	- 17.5
Sugar	773 (9.2)	983 (8.7)	1,817 (15.3)	1,491 (11.7)	27.2	84.8	- 18.0
Meat	1,295 (15.4)	1,315 (11.7)	1,271 (10.7)	1,271 (10.0)	1.5	- 3.3	16.0
- Beef	272	268	181	194	- 1.5	- 32.5	7.5
- Processed beef	324	300	302	233	- 7.4	0.7	- 22.7
- Chicken	569	609	637	840	7.0	4.6	31.9
- Pig	83	66	84	122	- 20.5	27.3	45.2
Fruits	275 (3.3)	268 (2.4)	278 (2.3)	296 (2.3)	- 2.5	3.7	6.6
Concentr. Juice	827 (10.6)	958 (8.7)	1,105 (9.3)	1,392 (11.00)	19.1	12.2	25.9
Tobacco	890 (10.6)	1,031 (9.2)	1,175 (10.0)	1,515 (13.6)	15.8	14.0	29.0
- Cigar	697	694	769	1,029	- 0.4	10.8	33.8
- Cigarette	193	328	402	481	69.9	22.6	19.7
Total	8,410	11,264	11,871	12,693	33.9	5.4	6.9

**Table I – 4.5(2) Major Agriculture-related Imports**

Unit: FOB in million of US\$

Products	1993	1994	1995	1996*	Growth Rate (%)		
					93/94	94/95	95/96
Grains	1,229	1,408	1,665	1,920	14.4	18.3	25.8
Wheat	726	749	909	343	3.2	21.4	- 59.8
Fertilizer	511	634	661	794	24.1	4.3	28.3
Total	2,466	2,791	3,235	3,057	13.9	15.9	

Note: \* Jan-Nov.

Source: Ministry of Finance

**Table I – 4.5(3) Supply and Demand of Rice**

Unit: In thousand tons

Year	Storage	Production	Import	Total Supply	Consumption	Balance	Export	Balance
1989/90	4,472.9	7,967.6	717.6	13,158.1	11,000.0	2,158.1	10.8	2,147.3
1990/91	2,147.3	9,996.8	1,296.6	13,440.7	11,220.0	2,220.7	2.1	22,18.6
1991/92	2,218.6	10,102.8	732.3	13,053.7	11,332.2	1,721.5	5.1	1,716.4
1992/93	1,716.4	9,902.8	880.9	12,500.1	11,445.5	1,054.6	5.7	1,048.9
1993/94	1,048.9	10,522.8	1,565.5	13,137.2	11,560.0	1,577.2	3.9	1,573.3
1994/95	1,573.3	11,237.3	978.6	13,789.2	11,617.8	2,171.4	34.7	2,136.7
1995/96	2,136.7	10,061.6	1,000.0	13,198.3	11,734.0	1,464.3	5.0	1,459.3

Source: CONAB

**Table I – 6.1(1) Forecast of World Food Supply and Demand**

Unit: In million tons

Organizations (Target Year)	Industrialized Countries			Developing countries			World in Total		
	Prod.	Cons.	Balance	Prod.	Cons.	Balance	Prod.	Cons.	Balance
Japan's MAFF (2010)	1057	924	134	1331	1465	-134	2388	2388	0
	1059	856	203	1141	1349	-208	2200	2205	-5
FAO (2010)	1028	866	162	1318	1480	-162	2346	2346	0
World Bank (2010)	1045	829	216	1261	1459	-198	2306	2288	18
IFPRI (2010)	1159	980	179	1211	1390	-179	2370	2370	0
USDA (2005)							2121	2105	16
Worldwatch (2030)							2149	2675	-526

Reference:

1) Japan's Ministry of Agriculture, Forestry and Fisheries (MAFF). 'Present Situation and Outlook of Food Supply and Demand in the World', 1996; Has forecast for two scenarios; the status quo scenario and the restricted production scenario (upper column is the status quo scenario and the lower column is the restricted production scenario).

2) FAO. "World Agriculture: Toward 2010", 1995; Makes the forecast for major farm produce by using a model, using this as the basis for making the forecast by taking into consideration the past trend of demand and supply on a country and region basis.

3) The World Bank. "The World Food Outlook", 1993; Makes the forecast by using a world grain model by country, by region and by grain (wheat, rice, coarse grain).

4) International Food Policy Research Institute (IFPRI). "Global and Regional Food Demand, Supply and Trade Prospects to 2010", 1994; Makes the forecast by using a food demand-supply equilibrium model by country, by region and by item.

5) United States Department of Agriculture (USDA). "Long Term World Agricultural Commodity Baseline Projections", 1994; Makes the forecast according to anticipated policy model by country that combines detailed models of respective countries with emphasis on the American market.

6) Worldwatch Institute: "Tough Choices: Facing the Challenge of Food Scarcity", 1996; Makes the forecast according to food demand-supply by taking into consideration various limiting conditions in future agricultural production with the purpose of giving warning.

**Table I – 6.2(1) Crops Cultivated Area in the World**

Regions	Cultivated Area (In million ha)			% to Total Land Extension		
	1980	1990	1992	1980	1990	1992
Asia	450	456	459	16.3	16.3	16.6
China	100	97	96	10.5	10.1	10.0
Africa	173	182	183	5.7	6.0	6.0
Europe	141	139	137	28.9	28.5	28.0
N.&C. America	274	274	271	12.2	12.2	11.9
USA	(191)	(190)	(188)	20.3	20.3	19.1
S. America	101	114	113	5.7	6.4	6.3
Oceania	46	51	53	5.4	5.9	6.2
Ex-Soviet Union	232	230	n.a.	10.4	10.2	n.a.
World Total	1417	1444	1444	10.6	10.8	10.8

Source: FAO Production Year Book 1991, 92, 93